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JC560 U.S. PTO 11/30/98

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	9710-004	*Total Pages*	287
First Named Inventor or Application Identifier			
GRIFFAIS, REMY			
Express Mail Label No.	EM 061 017 971 US		

JC542 U.S. PTO 09/201228 11/30/98

APPLICATION ELEMENTS
See MPEP chapter 600 concerning utility patent application contents.

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1. ☒ Fee Transmittal Form
   Submit an original, and a duplicate for fee processing)
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   (preferred arrangement set forth below)
   - -Descriptive title of the Invention
   - -Cross Reference to Related Applications
   - -Statement Regarding Fed sponsored R&D
   - -Reference to Microfiche Appendix
   - -Background of the Invention
   - -Brief Summary of the Invention
   - -Brief Description of the Drawings *(if filed)*
   - -Detailed Description of the Invention (including drawings, *if filed*)
   - -Claim(s)
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3. ☒ Drawing(s) *(35 USC 113)* [*Total Sheets* 3]
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   i. ☐ DELETION OF INVENTORS(S)
   Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33 (b).
5. ☐ Incorporation By Reference *(useable if Box 4b is checked)*
   The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ Microfiche Computer Program *(Appendix)*
7. ☒ Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*
   a. ☒ Computer Readable Copy
   b. ☒ Paper Copy (identical to computer copy)
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ACCOMPANYING APPLICATION PARTS

8. ☐ Assignment Papers (cover sheet & document(s))
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CHLAMYDIA TRACHOMATIS GENOMIC SEQUENCE AND POLYPEPTIDES, FRAGMENTS THEREOF AND USES THEREOF, IN PARTICULAR FOR THE DIAGNOSIS, PREVENTION AND TREATMENT OF INFECTION

The subject of the invention is the genomic sequence and the nucleotide sequences encoding polypeptides of *Chlamydia trachomatis*, such as cellular envelope polypeptides, which are secreted or specific, or which are involved in metabolism, in the replication process or in virulence, polypeptides encoded by such sequences as well as vectors including the said sequences and cells or animals transformed with these vectors. The invention also relates to transcriptional gene products of the *Chlamydia trachomatis* genome, such as, for example, antisense and ribozyme molecules, which can be used to control growth of the microorganism. The invention also relates to methods of detecting these nucleic acids or polypeptides and kits for diagnosing *Chlamydia trachomatis* infection. The invention also relates to a method of selecting compounds capable of modulating bacterial infection and a method for the biosynthesis or biodegradation of molecules of interest using the said nucleotide sequences or the said polypeptides. The invention finally comprises, pharmaceutical, in particular vaccine, compositions for the prevention and/or treatment of bacterial, in particular *Chlamydia trachomatis*, infections.

The genus *Chlamydia* is composed of four species: *Chlamydia psittaci*, *Chlamydia pecorum*, *Chlamydia pneumoniae* and *Chlamydia trachomatis*.

Chlamydia psittaci comprises numerous species, whose hosts are terrestrial vertebrate animals as well as birds and occasionally humans;

Chlamydia pecorum is a pathogen of ruminants;

Chlamydia pneumoniae is responsible for pneumopathies, for sinusitis and for arterial impairments in humans;

Chlamydia trachomatis (Ct) is responsible for a large number of human diseases:

- eye diseases: conventional trachoma, nonendemic trachoma, paratrachoma, inclusion conjunctivitis in neonates and in adults;
- genital diseases: nongonococcal uretritis, epididymitis, cervicitis, salpingitis, perihepatitis and bartholinitis as well as pneumopathy in breast-feeding infants;
- systemic diseases: venereal lymphogranulomatosis (LGV).

These diseases affect a very large number of women and men [more than 600 million individuals are trachoma carriers and there are more than 90 million cases of genital *Chlamydia* infections] worldwide. Accordingly, basic and applied research which makes it possible to understand the physiopathology linked to this bacterium is very important for public health. (Raulston JE., 1995; Hackstadt T. et al., 1996).

Eye impairments due to *Chlamydia trachomatis* cause trachoma and inclusion

conjunctivitis. Trachoma is a chronic conjunctivitis. It is the major cause of curable eye diseases leading to blindness. It is estimated that 20 million cases of loss of sight are due to it worldwide. Moreover, inclusion conjunctivitis is an eye inflammation which is caused by *Chlamydia trachomatis* and is transmitted by the venereal route. Inclusion conjunctivitis affects adults and neonates exposed to genital secretions.

Two types of eye disease caused by agents of the species *Chlamydia trachomatis* can be distinguished. The conventional trachomatous disease is found in endemic regions; transmission occurs from eye to eye and through the hands, or it can be passed on by flies. In nonendemic regions, transmission occurs through the genital apparatus; it usually only causes conjunctivitis, most often without associated keratitis; it is rare for a pannus or for scars similar to those in trachoma to develop. This conjunctival impairment is called paratrachoma to differentiate it from the conventional endemic trachoma which is transmitted by the ocular route. The seriousness and the number of cases of trachoma have decreased over the last forty years. This is related to the improvement in hygiene and living conditions. However, trachoma remains the principal cause of avoidable blindness in Africa, in the Middle East and in some regions of Asia. The transmission of the endemic disease occurs in particular through close personal contact, in regions where a secondary exposure exists in a repeated form. Often, the infection is also latent. In some industrialized countries, such as the United States, a mild form of trachoma still exists in some ethnic groups. Sometimes, a tardive trachoma may be found following an immunosuppressive treatment. The eye impairments caused by *Chlamydia trachomatis*, such as inclusion conjunctivitis and paratrachoma, are also a complication due to a common venereal infection. These infections are not very frequent; they occur most often in young adults. The eye impairments in neonates are produced during the passage through the maternal genital routes during childbirth. Theoretically, endemic trachoma and inclusion conjunctivitis in adults appear in the form of conjunctivitis, the latter being characterized by the presence of lymphoid follicles. In regions where the endemic disease is serious, the disease often starts before the age of 2 years and reinfection is frequent. Superficial neovascularization is added, in this case, to leukocytic infiltration. The conjunctival scars will then cause trichiasis and entropion. The eroded cornea will become a carrier of a corneal ulcer of bacterial origin. The scar on the cornea causes blindness. Impairment of the lachrymal glands gives a picture of dryness of the cornea. Xerosis becomes complicated with secondary bacterial ulcer. In regions where trachoma is endemic, the infectious process disappears towards the age of fifteen. The scars then progress to blindness, which affects almost exclusively adults. In regions where exposure is lower, the infectious process is, in this case, less rapid and adults are carriers of a chronic disease.

Positive diagnosis of trachoma can be most often established by clinical observation: lymphoid follicles are visible on the upper tarsal conjuctiva; conjunctival scar is typical. Vascular

pannus exists. In endemic regions, clinical diagnosis is often sufficient. However, isolated cases of inclusion conjunctivitis must be the subject of a differential diagnosis, in particular to distinguish viral conjunctivitis.

Public health measures against the endemic form of the disease provide for mass treatments with tetracycline or erythromycin collyria of all children. The treatment may also provide for surgical correction of the lesions. The other conjunctival impairments respond well to general treatments with tetracyclines or erythromycin. The prevention of trachomatous disease by health measures and by improving living standards is sufficient. Furthermore, to avoid the spread of trachoma, antibiotic collyria may be used.

The role of *Chlamydia trachomatis* in a number of genital impairments has been demonstrated over the last three decades. *Chlamydia trachomatis* is responsible in this case for a pathology which may be superposed on the impairments observed with *Neisseria gonorrhoeae*. The pathologies for which *Chlamydia trachomatis* may be responsible at the genital level are acquired by the venereal route and are a major source of sexually transmitted diseases.

The epidemiology of *Chlamydia trachomatis* genital infections shows each year more than 4 million new cases in the United States, and more than 3 million new cases in Europe. Like the other venereal infections, *Chlamydia trachomatis* affects young subjects. There is a direct relationship between the number of sexual partners and the frequency of the disease. For example, the frequency of *Chlamydia trachomatis* appears to be five to ten times higher than that of *Neisseria gonorrhoeae* in pregnant women. The *Chlamydia trachomatis* infection is probably more discreet than its *Neisseria gonorrhoeae* homologue. This relative clinical silence, estimated in women at 50% or even 70% of infections, explains why the total morbidity of *Chlamydia trachomatis* conditions is high. Diagnosis must therefore be requested in patients who are sometimes asymptomatic carriers of infection.

Chlamydia trachomatis is responsible for nearly 30% of nongonococcal urethritis, or NGU. *Chlamydia trachomatis* urethritis may be discreet, the disease then progresses to a certain form of chronicity. The diagnosis will, like for the other clinical forms of the disease, be called into play later.

Chlamydia trachomatis is a cause of epididymitis in humans during a period of sexual activity. The bacterium may be found in the urethra, urine, sperm or even a sample collected by aspiration from the epididymis. It is in particular found in humans under 35 years of age. A discharge from the urethra which is associated with the disease suggests the diagnosis of a *Chlamydia* condition or sometimes a gonococcal condition.

Untreated Reiter's syndrome, if accompanied by urethritis, evokes a *Chlamydia trachomatis* condition.

Chlamydia trachomatis affects 30% to 40% of women who are clinically carriers of a

gonorrhoea (or have had contact), 10% to 20% of women having a venereal origin, 5% of women consulting having no particular origin.

The cervix is often normal during a *Chlamydia trachomatis* infection. However, a hypertrophic cervical erythema will cause such an infection to be suspected. *Chlamydia trachomatis* is responsible for an endocervicitis whereas viral impairments result in exocervicitis. A nongonococcal endocervicitis requires treating the patient and partners with tetracyclines.

Chlamydia trachomatis is responsible for a large number of acute salpingites. The picture is often complicated by an acute peritonitis or even a perihepatitis.

In case of pregnancy, the risk is first that of infection of the neonate at birth. However, the risk of postpartum complications exists (endometritis or salpingitis).

The reference method for the diagnosis of *Chlamydia trachomatis* is the isolation of the bacterium on cell culture. For all infections, the sample collection should make it possible to obtain a suitable sample with the aid of a swab. This sample should be transported to a laboratory under excellent conditions; in particular, the cold chain must absolutely be maintained. The placing in cell culture on mouse fibroblasts will be carried out by people having specific skills. The distinction of *Chlamydia trachomatis* with labelled antibodies and the observation of cell cultures under a microscope will take place two days after placing in culture. Provided these imperatives are observed, cell culture is a reliable technique. However, the constraints linked to this technique are many: not only must the laboratory be equipped for the cell culture, but, furthermore, highly competent staff must take care of this type of diagnosis.

Techniques for identifying genetic material can obviously be used for the detection of *Chlamydia trachomatis*. Among these techniques, enzymatic gene amplification or PCR is favoured by those skilled in the art. The technique indeed makes it possible to identify *Chlamydia trachomatis* with a very high sensitivity and complete specificity. Initially used in specialist laboratories, PCR is now performed in numerous medical laboratories. This diagnostic approach is important because it allows detection of the bacteria even in samples which have been transported under poor conditions.

The treatment of *Chlamydia* urethritis with antibiotics such as tetracycline or quinolones is very effective. The duration of treatment varies between 7 and 14 days. The treatment of pregnant women poses the problem of contraindications to tetracycline.

Neonatal infections caused by *Chlamydia trachomatis* are explained by the frequency of these bacteria in the cervix. In some studies, 5% to 13% of impairments are observed in the cervix in asymptomatic pregnant women. The neonates risk, in this case, developing an inclusion conjunctivitis. Not only can *Chlamydia trachomatis* be isolated from the children's eyes, but also persistently from the rhinopharynx and also from the rectum. Pneumopathies and otitis media are also found, a result of contamination at childbirth.

Differential diagnosis of inclusion conjunctivitis in neonates is required with gonococcal ophthalmia; while the duration of incubation is from one to three days in the case of a gonococcal ophthalmia, neonatal inclusion conjunctivitis has an acute beginning with discharge and formation of membranes or even of conjunctival scars.

Treatment consists of oral erythromycin at the dose of 40 to 50 mg per kg of weight, for two to three weeks. In a nonendemic trachoma region, this disease never progresses to chronicity.

Finally, mention should be made of infantile pneumopathy. The syndrome is well defined; it is found in children affected by *Chlamydia trachomatis*. Less than ten children are affected by *Chlamydia trachomatis* pneumopathies per thousand births. The syndrome is, in this case, always found at an early age (less than four months).

Venereal lymphogranulomatosis is an infection which is transmitted through sexual contact and is due to *Chlamydia trachomatis* strains L1, L2 and L3. In humans, a passing primary genital lesion is followed by an often suppurative and multiple regional lymphadenopathy. This disease is a general disease which is accompanied by fever and a rise in the number of white blood cells. If it progresses to chronicity, the disease then becomes complicated with genital elephantiasis, stricture or even fistula of the genital apparatus, of the penis, of the urethra and of the rectum.

The three *Chlamydia trachomatis* strains L1, L2 and L3 are responsible for venereal lymphogranulomatosis. These *Chlamydia* strains are more virulent than the strains responsible for trachoma and STD. It is very important to note that venereal lymphogranulomatosis is a systemic disease which affects primarily the lymphatic tissue. Generally transmitted by the sexual route, *Chlamydia trachomatis* L may also cause contamination through direct contact or even during poor laboratory handling. In spite of these variable modes of transmission, the age for the highest incidence of these diseases corresponds to that for greater sexual activity. Venereal lymphogranulomatosis is still endemic in South America, in Africa and sometimes in Asia. For a long time, the prevalence of venereal lymphogranulomatosis was difficult to establish because of the difficulty of performing diagnosis with certitude. It should also be noted that men are affected more often than women. In low endemic regions, it is difficult to recognize the reservoir of microbes. This situation is explained by the fact that the isolation of the strains causing venereal lymphogranulomatoses from asymptomatic subjects is rarely successful.

Clinical impairment by venereal lymphogranulomatosis manifests itself by the appearance of a small ulcer 3 to 21 days after the exposure of small nonpainful vesicles. In both men and women, the lesion is most often silent. Since this impairment disappears within a few days and causes no functional discomfort and leaves no visible scar, the disease is often recognized late. The venereal lymphogranulomatosis strains may be found in the urethra or the endocervix in patients with inguinal adenopathies; these regions are then considered as the initial site of infection. The

characteristic feature of the venereal lymphogranulomatosis strains is that from the initial site of infection, *Chlamydia* exhibits a diffusion drained by the lymphatic ducts. The disease is then complicated by a ganglionic impairment of the region draining the site of inoculation. By way of example, anorectal infection causes deep adenopathies. These adneopathies are marked by the appearance of a periadenitis which forms a fluctuating and suppurative ganglionic mass. Fistulae will appear during the decline of the disease. As general signs are present at this stage of the disease, it is often confused with a malignant lymphoma. The other general complications are rarely observed. Clinical examinations have been able to lead biologists to isolate *Chlamydia* from the cerebrospinal fluid or from the blood. It should also be noted that in a number of cases (5%), venereal lymphogranulomatosis is complicated by a chronic oedema: this is genital elephantiasis.

The diagnosis of venereal lymphogranulomatosis requires the isolation of the *Chlamydia* strains involved in the disease. However, isolation on cell cultures is rarely used, but immunological reactions may be used.

The treatment of venereal lymphogranulomatosis in its initial phase is identical to the treatment of other *Chlamydia* infections. In the chronic phases, antibiotics have little effect on the progress of the disease, but they are however useful in case of superinfection. Although the recommended therapeutic arsenal is identical, it is advisable to prolong the treatment for a period of at least four weeks. In addition to this treatment, reconstructive surgery may be useful in cases of urethral, penile or rectal strictures, as well as for the treatment of fistulae.

In conclusion, a short and effective treatment, without recurrences, and a well-tolerated treatment of *Chlamydia trachomatis* infections therefore remains desirable.

An even greater need up until now relates to a diagnosis which is specific to each of the strains, which is sensitive, which can be carried out conveniently and rapidly, and which allows early detection of the infection.

No vaccine is currently available against *Chlamydia trachomatis*. The role of the immune defense in the physiology and pathology of the disease should probably be understood in order to develop satisfactory vaccines.

More detailed information relating to the biology of these strains, their interactions with their hosts, the associated phenomena of infectivity and those of escaping the immune defenses of the host in particular, and finally their involvement in the development of the these associated pathologies, will allow a better understanding of these mechanisms. In the light of the preceding text which shows in particular the limitations of the means of controlling *Chlamydia trachomatis* infection, it is therefore at present essential, on the one hand, to develop molecular tools, in particular from a better genetic knowledge of *Chlamydia trachomatis*, but also to develop new preventive and therapeutic treatments, new diagnostic methods and new vaccine strategies which are specific,

effective and tolerated. This is precisely the object of the present invention.

The subject of the present invention is the nucleotide sequence having the sequence SEQ ID No. 1 of the *Chlamydia trachomatis LGV2* genome. However, the invention is not limited to SEQ ID No. 1, but encompasses genomes and nucleotides encoding polypeptides of strain variants, polymorphisms, allelic variants, and mutants.

Thus, the subject of the present invention encompasses nucleotide sequences characterized in that they are chosen from:

a) the nucleotide sequence of SEQ ID No. 1, a nucleotide sequence exhibiting at least 99.9% identity with the sequence SEQ ID No. 1, the nucleotide sequence of the genomic DNA contained within ECACC Deposit No. 98112618, the nucleotide sequence of a clone insert within ECACC Deposit No. 98112617 (these being provisional deposit numbers);

b) a nucleotide sequence homologous to the sequence SEQ ID No. 1;

c) a polynucleotide sequence that hybridizes to the nucleotide sequence of a) under conditions of high or intermediate stringency as described below:

(i) By way of example and not limitation, procedures using conditions of high stringency are as follows: Prehybridization of filters containing DNA is carried out for 8 h to overnight at 65°C in buffer composed of 6X SSC, 50 mM Tris-HCl (pH 7.5), 1 mM EDTA, 0.02% PVP, 0.02% Ficoll, 0.02% BSA, and 500 µg/ml denatured salmon sperm DNA. Filters are hybridized for 48 h at 65°C, the preferred hybridization temperature, in prehybridization mixture containing 100 µg/ml denatured salmon sperm DNA and 5-20 X 10^6 cpm of ^{32}P-labeled probe. Alternatively, the hybridization step can be performed at 65°C in the presence of SSC buffer, 1 x SSC corresponding to 0.15M NaCl and 0.05 M Na citrate. Subsequently, filter washes can be done at 37°C for 1 h in a solution containing 2X SSC, 0.01% PVP, 0.01% Ficoll, and 0.01% BSA, followed by a wash in 0.1X SSC at 50°C for 45 min. Alternatively, filter washes can be performed in a solution containing 2 x SSC and 0.1% SDS, or 0.5 x SSC and 0.1% SDS, or 0.1 x SSC and 0.1% SDS at 68°C for 15 minute intervals. Following the wash steps, the hybridized probes are detectable by autoradiography. Other conditions of high stringency which may be used are well known in the art and as cited in Sambrook et al., 1989, Molecular Cloning, A Laboratory Manual, Second Edition, Cold Spring Harbor Press, N.Y., pp. 9.47-9.57; and Ausubel et al., 1989, Current Protocols in Molecular Biology, Green Publishing Associates and Wiley Interscience, N.Y. are incorporated herein in their entirety.

(ii) By way of example and not limitation, procedures using conditions of intermediate stringency are as follows: Filters containing DNA are prehybridized, and then hybridized at a temperature of 60°C in the presence of a 5 x SSC buffer and labeled probe. Subsequently, filters washes are performed in a solution containing 2x SSC at 50°C and the hybridized probes are detectable by autoradiography. Other conditions of intermediate stringency which may be used are

well known in the art and as cited in Sambrook et al., 1989, Molecular Cloning, A Laboratory Manual, Second Edition, Cold Spring Harbor Press, N.Y., pp. 9.47-9.57; and Ausubel et al., 1989, Current Protocols in Molecular Biology, Green Publishing Associates and Wiley Interscience, N.Y. are incorporated herein in their entirety.

d) a nucleotide sequence complementary to the sequence SEQ ID No. 1 or complementary to a nucleotide sequence as defined in a), b) or c), and a nucleotide sequence of their corresponding RNA;

e) a nucleotide sequence of a representative fragment of the sequence SEQ ID No. 1, or of a representative fragment of the nucleotide sequence as defined in a), b), c) or d);

f) a nucleotide sequence comprising a sequence as defined in a), b), c), d) or e);

g) a nucleotide sequence capable of being obtained from a nucleotide sequence as defined in a), b), c), d), e) or f); and

h) a modified nucleotide sequence of a nucleotide sequence as defined in a), b), c), d), e), f) or g).

Sequence of the genome, or genomic sequence of *Chlamydia trachomatis* is understood to mean the sequence of the chromosome of *Chlamydia trachomatis*, in contrast with the plasmid sequence of *Chlamydia trachomatis*.

Nucleotide sequence, polynucleotide or nucleic acid are understood to mean, according to the present invention, either a double-stranded DNA, a single-stranded DNA or products of transcription of the said DNAs.

It should be understood that the present invention does not relate to the genomic nucleotide sequences of *Chlamydia trachomatis* taken in their natural environment, that is to say in the natural state. They are sequences which may have been isolated, purified or partially purified, by separation methods such as, for example, ion-exchange chromatography, molecular size exclusion chromatography or affinity chromatography, or alternatively fractionation techniques based on solubility in various solvents, or by genetic engineering methods such as amplification, cloning or subcloning, it being possible for the sequences of the invention to be carried by vectors.

The nucleotide sequence SEQ ID No. 1 was obtained by sequencing the *Chlamydia trachomatis LGV2* genome by the method of directed sequencing after fluorescent automated sequencing of the inserts of clones and assembling of these sequences of nucleotide fragments (inserts) by means of softwares (cf. Examples). In spite of the high precision of the sequence SEQ ID No. 1, it is possible that it does not perfectly, 100% represent the nucleotide sequence of the *Chlamydia trachomatis LGV2* genome and that a few rare sequencing errors or uncertainties still remain in the sequence SEQ ID No. 1. In the present invention, the presence of an uncertainty for an amino acid is designated by «Xaa» and that for a nucleotide is designated by «N» in the sequence

listing below. These few rare errors or uncertainties could be easily detected and corrected by persons skilled in the art using the entire chromosome and/or its representative fragments according to the invention and standard amplification, cloning and sequencing methods, it being possible for the sequences obtained to be easily compared, in particular by means of a computer software and using computer-readable media for recording the sequences according to the invention as described, for example, below. After correcting these possible rare errors or uncertainties, the corrected nucleotide sequence obtained would still exhibit at least 99.9% identity with the sequence SEQ ID No. 1. Such rare sequencing uncertainties are not present within the DNA contained within ECACC Deposit No. 98112617 or 98112618 (provisional numbers) and whatever rare sequence uncertainties that exist within SEQ ID No. 1 can routinely be corrected utilizing the DNA of the ECACC Deposits.

Homologous nucleotide sequence for the purposes of the present invention is understood to mean a nucleotide sequence having a percentage identity with the bases of the nucleotide sequence SEQ ID No. 1 of at least 80%, preferably 90% and 95%, this percentage being purely statistical and it being possible for the differences between the two nucleotide sequences to be distributed randomly and over their entire length. The said homologous sequences exhibiting a percentage identity with the bases of the nucleotide sequence SEQ ID No. 1 of at least 80%, preferably 90% and 95%, may comprise, for example, the sequences corresponding to the genomic sequence or to the sequences of its representative fragments of a bacterium belonging to the Chlamydia family, including the species *Chlamydia pneumoniae*, *Chlamydia psittaci* and *Chlamydia pecorum* mentioned above, as well as the sequences corresponding to the genomic sequence or to the sequences of its representative fragments of a bacterium belonging to the variants of the species *Chlamydia trachomatis*. In the present invention, the terms family and genus are mutually interchangeable, the terms variant, serotype, strain and subspecies are also mutually interchangeable. These homologous sequences may thus correspond to variations linked to mutations within the same species or between species and may correspond in particular to truncations, substitutions, deletions and/or additions of at least one nucleotide. The said homologous sequences may also correspond to variations linked to the degeneracy of the genetic code or to a bias in the genetic code which is specific to the family, to the species or to the variant and which are likely to be present in *Chlamydia*.

Protein and/or nucleic acid sequence homologies may be evaluated using any of the variety of sequence comparison algorithms and programs known in the art. Such algorithms and programs include, but are by no means limited to, TBLASTN, BLASTP, FASTA, TFASTA, and CLUSTALW (Pearson and Lipman, 1988, *Proc. Natl. Acad. Sci. USA 85(8)*:2444-2448; Altschul *et al.*, 1990, *J. Mol. Biol. 215(3)*:403-410; Thompson *et al.*, 1994, *Nucleic Acids Res. 22(2)*:4673-4680; Higgins *et al.*, 1996, *Methods Enzymol. 266*:383-402; Altschul *et al.*, 1990, *J. Mol. Biol. 215(3)*:403-410; Altschul *et al.*, 1993, *Nature Genetics 3*:266-272).

In a particularly preferred embodiment, protein and nucleic acid sequence homologies are evaluated using the Basic Local Alignment Search Tool ("BLAST") which is well known in the art (see, *e.g.*, Karlin and Altschul, 1990, *Proc. Natl. Acad. Sci. USA 87*:2267-2268; Altschul *et al.*, 1990, *J. Mol. Biol. 215*:403-410; Altschul *et al.*, 1993, *Nature Genetics 3*:266-272; Altschul *et al.*, 1997, *Nuc. Acids Res. 25*:3389-3402). In particular, five specific BLAST programs are used to perform the following task:

(1)BLASTP and BLAST3 compare an amino acid query sequence against a protein sequence database;

(2)BLASTN compares a nucleotide query sequence against a nucleotide sequence database;

(3)BLASTX compares the six-frame conceptual translation products of a query nucleotide sequence (both strands) against a protein sequence database;

(4)TBLASTN compares a query protein sequence against a nucleotide sequence database translated in all six reading frames (both strands); and

(5)TBLASTX compares the six-frame translations of a nucleotide query sequence against the six-frame translations of a nucleotide sequence database.

The BLAST programs identify homologous sequences by identifying similar segments, which are referred to herein as "high-scoring segment pairs," between a query amino or nucleic acid sequence and a test sequence which is preferably obtained from a protein or nucleic acid sequence database. High-scoring segment pairs are preferably identified (*i.e.*, aligned) by means of a scoring matrix, many of which are known in the art. Preferably, the scoring matrix used is the BLOSUM62 matrix (Gonnet *et al.*, 1992, *Science 256*:1443-1445; Henikoff and Henikoff, 1993, *Proteins 17*:49-61). Less preferably, the PAM or PAM250 matrices may also be used (see, *e.g.*, Schwartz and Dayhoff, eds., 1978, *Matrices for Detecting Distance Relationships: Atlas of Protein Sequence and Structure*, Washington: National Biomedical Research Foundation)

The BLAST programs evaluate the statistical significance of all high-scoring segment pairs identified, and preferably selects those segments which satisfy a user-specified threshold of significance, such as a user-specified percent homology. Preferably, the statistical significance of a high-scoring segment pair is evaluated using the statistical significance formula of Karlin (see, *e.g.*, Karlin and Altschul, 1990, *Proc. Natl. Acad. Sci. USA 87*:2267-2268).

Nucleotide sequence complementary to a sequence of the invention is understood to mean any DNA whose nucleotides are complementary to those of the sequence of the invention, and whose orientation is reversed (antiparallel sequence).

The present invention further comprises fragments of the sequences of a) through h) above. Representative fragments of the sequences according to the invention will be understood to mean any nucleotide fragment having at least 8 successive nucleotides, preferably at least 12

successive nucleotides, and still more preferably at least 15 or at least 20 successive nucleotides of the sequence from which it is derived. It is understood that such fragments refer only to portions of SEQ ID No. 1 that are not currently listed in a publicly available database.

Among these representative fragments, those capable of hybridizing under stringent conditions with a nucleotide sequence according to the invention are preferred. Hybridization under stringent conditions means that the temperature and ionic strength conditions are chosen such that they allow hybridization to be maintained between two complementary DNA fragments.

By way of illustration, high stringency conditions for the hybridization step for the purposes of defining the nucleotide fragments described above, are advantageously the following.

The hybridization is carried out at a preferred temperature of 65°C in the presence of SSC buffer, 1 x SSC corresponding to 0.15 M NaCl and 0.05 M Na citrate. The washing steps may be, for example, the following:

2 x SSC, 0.1% SDS at room temperature followed by three washes with 1 x SSC, 0.1% SDS; 0.5 x SSC, 0.1% SDS; 0.1 x SSC, 0.1% SDS at 68°C for 15 minutes.

Intermediate stringency conditions, using, for example, a temperature of 60°C in the presence of a 5 x SSC buffer, or of low stringency, for example a temperature of 50°C in the presence of a 5 x SSC buffer, respectively require a lower overall complementarity for the hybridization between the two sequences.

The stringent hybridization conditions described above for a polynucleotide of about 300 bases in size will be adapted by persons skilled in the art for larger- or smaller-sized oligonucleotides, according to the teaching of Sambrook et al., 1989.

Among the representative fragments according to the invention, those which can be used as primer or probe in methods which make it possible to obtain homologous sequences or their representative fragments according to the invention, or to reconstitute a genomic fragment found to be incomplete in the sequence SEQ ID No. 1 or carrying an error or an uncertainty, are also preferred, these methods, such as the polymerase chain reaction (PCR), cloning and sequencing of nucleic acid being well known to persons skilled in the art. These homologous nucleotide sequences corresponding to mutations or to inter- or intra-species variations, as well as the complete genomic sequence or one of its representative fragments capable of being reconstituted, of course form part of the invention.

Among the said representative fragments, those which can be used as primer or probe in methods allowing diagnosis of the presence of *Chlamydia trachomatis* or one of its associated microorganisms as defined below are also preferred.

The representative fragments capable of modulating, regulating, inhibiting or inducing the expression of a gene of *Chlamydia trachomatis* or one of its associated microorganisms, and/or capable of modulating the replication cycle of *Chlamydia trachomatis* or one of its associated

microorganisms in the host cell and/or organism, are also preferred. Replication cycle is intended to designate invasion, multiplication, intracellular localization, in particular retention in the vacuole and inhibition of the process of fusion to the lysosome, and propagation of *Chlamydia trachomatis* or one of its associated microorganisms from host cells to host cells.

Among the said representative fragments, those corresponding to nucleotide sequences corresponding to open reading frames, called ORF sequences (ORF for open reading frame), and encoding polypeptides, such as for example, but without being limited thereto, the ORF sequences which will be later described, are finally preferred.

The representative fragments according to the invention may be obtained, for example, by specific amplification, such as PCR, or after digestion, with appropriate restriction enzymes, of nucleotide sequences according to the invention; these methods are in particular described in the manual by Sambrook et al., 1989. The said representative fragments may also be obtained by chemical synthesis when they are not too large in size and according to methods well known to persons skilled in the art. For example, such fragments can be obtained by isolating fragments of the genomic DNA of ECACC Deposit No. 98112618 or a clone insert present at this ECACC Deposit No. 98112617 (provisional numbers).

The representative fragments according to the invention may be used, for example, as primer, to reconstitute some of the said representative fragments, in particular those in which a portion of the sequence is likely to be missing or imperfect, by methods well known to persons skilled in the art such as amplification, cloning or sequencing techniques.

Modified nucleotide sequence will be understood to mean any nucleotide sequence obtained by mutagenesis according to techniques well known to persons skilled in the art, and exhibiting modifications in relation to the normal sequences, for example mutations in the regulatory and/or promoter sequences for the expression of a polypeptide, in particular leading to a modification of the level of expression of the said polypeptide or to a modulation of the replicative cycle.

Modified nucleotide sequence will also be understood to mean any nucleotide sequence encoding a modified polypeptide as defined below.

The subject of the present invention also includes *Chlamydia trachomatis* nucleotide sequences characterized in that they are chosen from a nucleotide sequence of an open reading frame (ORF), that is, the ORF2 to ORF1197 sequences.

The ORF2 to ORF1197 nucleotide sequences are defined in Tables 1 and 2, *infra*, represented below by their position on the sequence SEQ ID No. 1. For example, the ORF10 sequence is defined by the nucleotide sequence between the nucleotides at position 9828 and 10430 on the sequence SEQ ID No. 1, ends included. ORF2 to ORF1197 have been identified via homology analyses as well as via analyses of potential ORF start sites, as discussed in the examples

below. It is to be understood that each identified ORF of the invention comprises a nucleotide sequence that spans the contiguous nucleotide sequence from the codon immediately 3' to the stop codon of the preceding ORF and through the 5' codon to the next stop codon of SEQ ID No.:1 in-frame to the ORF nucleotide sequence. Table 2, *infra*, lists the beginning, end and potential start site of each of ORFs 2-1197. In one embodiment, the ORF comprises the contiguous nucleotide sequence spanning from the potential ORF start site downstream (that is, 3') to the ORF stop codon (or the ORF codon immediately adjacent to and upstream of the ORF stop codon). ORF2 to ORF1197 encode the polypeptides of SEQ ID No. 2 to SEQ ID No. 1197.

Upon introduction of minor frameshifts, certain individual ORFs can comprise larger «combined» ORFs. A list of such putative «combined» ORFs is shown in Table 3, below. For example, a combined ORF can comprise ORF 1076 and ORF 1073, including intervening in-frame, nucleotide sequences. The order of ORFs (5' to 3'), within each «combined» ORF is as listed. It is to be understood that when ORF2 to ORF1197 are referred to herein, such reference is also meant to include «combined» ORFs. Polypeptide sequences encoded by such «combined» ORFs are also part of the present invention.

Table 3

ORF 1076, ORF 1073;

ORF 3, ORF 2;

ORF 23, ORF 22, ORF 21;

ORF 1141, ORF 477, ORF 478, ORF 479;

ORF 487, ORF 486, ORF 485, ORF 484, ORF 483, ORF 482, ORF 481;

ORF 488, ORF 489;

ORF 573, ORF 572, ORF 571;

ORF 817, ORF 818;

ORF 819, ORF 820;

ORF 1037, ORF 1038;

ORF 1071, ORF 1070;

ORF 17, ORF 1077;

ORF 1185, ORF 933, ORF 934;

ORF 1060, ORF 1059;

ORF 155, ORF 156;

ORF 679, ORF 680;

ORF 879, ORF 878;

ORF 1028; ORF 1029,

and representative fragments.

Table 1 also depicts the results of homology searches that compared the sequences of the polypeptides encoded by each of the ORFs to sequences present in public published databases. It is understood that in one embodiment, those polypeptides listed in Table 1 as exhibiting greater than about 95% identity to a polypeptide present in a publicly disclosed database are not considered part of the present invention; likewise in this embodiment, those nucleotide sequences encoding such polypeptides are not considered part of the invention. In another embodiment, it is understood that those polypeptides listed in Table 1 as exhibiting greater than about 99% identity to a polypeptide present in a publicly disclosed database are not considered part of the invention; likewise, in this embodiment, those nucleotide sequences encoding such polypeptides are not considered part of the invention.

The invention also relates to the nucleotide sequences characterized in that they comprise a nucleotide sequence chosen from:

a) an ORF2 to ORF1197 , a «combined» ORF nucleotide sequence, the nucleotide sequence of the genomic DNA contained within ECACC Deposit No. 98112618 or the nucleotide sequence of a clone insert in ECACC Deposit No. 98112617 according to the invention;

b) a homologous nucleotide sequence exhibiting at least 80% identity across an entire ORF2 to ORF1197 nucleotide sequence according to the invention or as defined in a);

c) a polynucleotide sequence that hybridizes to ORF2 to ORF1197 under conditions of high or intermediate stringency as described below:

(i) By way of example and not limitation, procedures using conditions of high stringency are as follows: Prehybridization of filters containing DNA is carried out for 8 h to overnight at 65°C in buffer composed of 6X SSC, 50 mM Tris-HCl (pH 7.5), 1 mM EDTA, 0.02% PVP, 0.02% Ficoll, 0.02% BSA, and 500 µg/ml denatured salmon sperm DNA. Filters are hybridized for 48 h at 65°C, the preferred hybridization temperature, in prehybridization mixture containing 100 µg/ml denatured salmon sperm DNA and 5-20 X 10^6 cpm of ^{32}P-labeled probe. Alternatively, the hybridization step can be performed at 65°C in the presence of SSC buffer, 1 x SSC corresponding to 0.15M NaCl and 0.05 M Na citrate. Subsequently, filter washes can be done at 37°C for 1 h in a solution containing 2X SSC, 0.01% PVP, 0.01% Ficoll, and 0.01% BSA, followed by a wash in 0.1X SSC at 50°C for 45 min. Alternatively, filter washes can be performed in a solution containing 2 x SSC and 0.1% SDS, or 0.5 x SSC and 0.1% SDS, or 0.1 x SSC and 0.1% SDS at 68°C for 15 minute intervals. Following the wash steps, the hybridized probes are detectable by autoradiography. Other conditions of high stringency which may be used are well known in the art and as cited in Sambrook et al., 1989, Molecular Cloning, A Laboratory Manual, Second Edition, Cold Spring Harbor Press, N.Y., pp. 9.47-9.57; and Ausubel et al., 1989, Current Protocols in Molecular Biology, Green Publishing Associates and Wiley Interscience, N.Y. are incorporated herein in their entirety.

Preferably, such sequences encode a homolog of a polypeptide encoded by one of ORF2 to ORF1197. In one embodiment, such sequences encode a *Chlamydia trachomatis* polypeptide.

(ii) By way of example and not limitation, procedures using conditions of intermediate stringency are as follows: Filters containing DNA are prehybridized, and then hybridized at a temperature of 60°C in the presence of a 5 x SSC buffer and labeled probe. Subsequently, filters washes are performed in a solution containing 2x SSC at 50°C and the hybridized probes are detectable by autoradiography. Other conditions of intermediate stringency which may be used are well known in the art and as cited in Sambrook et al., 1989, Molecular Cloning, A Laboratory Manual, Second Edition, Cold Spring Harbor Press, N.Y., pp. 9.47-9.57; and Ausubel et al., 1989, Current Protocols in Molecular Biology, Green Publishing Associates and Wiley Interscience, N.Y. are incorporated herein in their entirety. Preferably, such sequences encode a homolog of a polypeptide encoded by one of ORF2 to ORF1197 . In one embodiment, such sequences encode a *Chlamydia trachomatis* polypeptide.

d) a complementary or RNA nucleotide sequence corresponding to an ORF2 to ORF1197 sequence according to the invention or as defined in a), b) or c);

e) a nucleotide sequence of a representative fragment of an ORF2 to ORF1197 sequence according to the invention or of a sequence as defined in a), b), c) or d);

f) a nucleotide sequence capable of being obtained from an ORF2 to ORF1197 sequence according to the invention or as defined in a), b), c), d) or e); and

g) a modified nucleotide sequence of an ORF2 to ORF1197 sequence according to the invention or as defined in a), b), c), d), e) or f).

As regards the homology with the ORF2 to ORF1197 nucleotide sequences, the homologous sequences exhibiting a percentage identity with the bases of one of the ORF2 to ORF1197 nucleotide sequences of at least 80%, preferably 90% and 95%, are preferred. Such homologous sequences are identified routinely via, for example, the algorithms described above and in the examples below. The said homologous sequences correspond to the homologous sequences as defined above and may comprise, for example, the sequences corresponding to the ORF sequences of a bacterium belonging to the Chlamydia family, including the species *Chlamydia pneumoniae*, *Chlamydia psittaci* and *Chlamydia pecorum* mentioned above, as well as the sequences corresponding to the ORF sequences of a bacterium belonging to the variants of the species *Chlamydia trachomatis*. These homologous sequences may likewise correspond to variations linked to mutations within the same species or between species and may correspond in particular to truncations, substitutions, deletions and/or additions of at least one nucleotide. The said homologous sequences may also correspond to variations linked to the degeneracy of the genetic code or to a bias in the genetic code which is specific to the family, to the species or to the variant and which are likely to be present in

Chlamydia.

The invention comprises the polypeptides encoded by a nucleotide sequence according to the invention, preferably by a representative fragment of the sequence SEQ ID No. 1 and corresponding to an ORF sequence, in particular the *Chlamydia trachomatis* polypeptides, characterized in that they are chosen from the sequences SEQ ID No. 2 to SEQ ID No. 1197 , and representative fragments thereof. However, the invention is not limited to polypeptides encoded by ORFs in SEQ ID No. 1 and its corresponding ORF sequences, but encompasses polypeptides of strain variants, polymorphisms, allelic variants, and mutants.

Thus, the invention also comprises the polypeptides characterized in that they comprise a polypeptide chosen from:

a) a polypeptide encoded by a polynucleotide sequence in SEQ ID No. 1 (*e.g.*, any polypeptide encoded by a polynucleotide sequence corresponding to ORF2 to ORF1197) and/or representative fragments thereof according to the invention;

b) a polypeptide homologous to a polypeptide according to the invention, or as defined in a);

c) a polypeptide encoded by a polynucleotide sequence that hybridizes to SEQ ID No. 1 or ORF2 to ORF1197 under high or intermediate stringency as described below:

(i) By way of example and not limitation, procedures using conditions of high stringency are as follows: Prehybridization of filters containing DNA is carried out for 8 h to overnight at 65°C in buffer composed of 6X SSC, 50 mM Tris-HCl (pH 7.5), 1 mM EDTA, 0.02% PVP, 0.02% Ficoll, 0.02% BSA, and 500 µg/ml denatured salmon sperm DNA. Filters are hybridized for 48 h at 65°C, the preferred hybridization temperature, in prehybridization mixture containing 100 µg/ml denatured salmon sperm DNA and 5-20 X 10^6 cpm of ^{32}P-labeled probe. Alternatively, the hybridization step can be performed at 65°C in the presence of SSC buffer, 1 x SSC corresponding to 0.15M NaCl and 0.05 M Na citrate. Subsequently, filter washes can be done at 37°C for 1 h in a solution containing 2X SSC, 0.01% PVP, 0.01% Ficoll, and 0.01% BSA, followed by a wash in 0.1X SSC at 50°C for 45 min. Alternatively, filter washes can be performed in a solution containing 2 x SSC and 0.1% SDS, or 0.5 x SSC and 0.1% SDS, or 0.1 x SSC and 0.1% SDS at 68°C for 15 minute intervals. Following the wash steps, the hybridized probes are detectable by autoradiography. Other conditions of high stringency which may be used are well known in the art and as cited in Sambrook et al., 1989, Molecular Cloning, A Laboratory Manual, Second Edition, Cold Spring Harbor Press, N.Y., pp. 9.47-9.57; and Ausubel et al., 1989, Current Protocols in Molecular Biology, Green Publishing Associates and Wiley Interscience, N.Y. are incorporated herein in their entirety. Preferably, such sequences encode a homolog of a polypeptide encoded by one of ORF2 to ORF1197 . In one embodiment, such sequences encode a *Chlamydia trachomatis* polypeptide.

(ii) By way of example and not limitation, procedures using conditions of intermediate stringency are as follows: Filters containing DNA are prehybridized, and then hybridized at a temperature of 60°C in the presence of a 5 x SSC buffer and labeled probe. Subsequently, filters washes are performed in a solution containing 2x SSC at 50°C and the hybridized probes are detectable by autoradiography. Other conditions of intermediate stringency which may be used are well known in the art and as cited in Sambrook et al., 1989, Molecular Cloning, A Laboratory Manual, Second Edition, Cold Spring Harbor Press, N.Y., pp. 9.47-9.57; and Ausubel et al., 1989, Current Protocols in Molecular Biology, Green Publishing Associates and Wiley Interscience, N.Y. are incorporated herein in their entirety. Preferably, such sequences encode a homolog of a polypeptide encoded by one of ORF2 to ORF1197 . In one embodiment, such sequences encode a *Chlamydia trachomatis* polypeptide.

d) a fragment of at least 5 amino acids of a polypeptide according to the invention, or as defined in a), b) or c);

e) a biologically active fragment of a polypeptide according to the invention, or as defined in a), b), c) or d); and

f) a modified polypeptide of a polypeptide according to the invention, as defined in a), b), c), d) or e).

In the present description, the terms polypeptide, peptide and protein are interchangeable.

It should be understood that the invention does not relate to the polypeptides in natural form, that is to say that they are not taken in their natural environment but that they may have been isolated or obtained by purification from natural sources, or alternatively obtained by genetic recombination, or else by chemical synthesis and that they may, in this case, comprise nonnatural amino acids, as will be described below.

Homologous polypeptide will be understood to designate the polypeptides exhibiting, in relation to the natural polypeptide, certain modifications such as in particular a deletion, addition or substitution of at least one amino acid, a truncation, an extension, a chimeric fusion, and/or a mutation, or polypeptides exhibiting post-translational modifications. Among the homologous polypeptides, those whose amino acid sequence exhibits at least 80%, preferably 90%, homology or identity with the amino acid sequences of the polypeptides according to the invention are preferred. In the case of a substitution, one or more consecutive or nonconsecutive amino acids are replaced by «equivalent» amino acids. The expression «equivalent» amino acid is intended here to designate any amino acid capable of being substituted for one of the amino acids in the basic structure without, however, essentially modifying the biological activities of the corresponding peptides and as will be defined later.

Protein and/or nucleic acid sequence homologies may be evaluated using any of the variety of sequence comparison algorithms and programs known in the art. Such algorithms and programs include, but are by no means limited to, TBLASTN, BLASTP, FASTA, TFASTA, and CLUSTALW (Pearson and Lipman, 1988, *Proc. Natl. Acad. Sci. USA 85(8)*:2444-2448; Altschul *et al.*, 1990, *J. Mol. Biol. 215(3)*:403-410; Thompson *et al.*, 1994, *Nucleic Acids Res. 22(2)*:4673-4680; Higgins *et al.*, 1996, *Methods Enzymol. 266*:383-402; Altschul *et al.*, 1990, *J. Mol. Biol. 215(3)*:403-410; Altschul *et al.*, 1993, *Nature Genetics 3*:266-272).

In a particularly preferred embodiment, protein and nucleic acid sequence homologies are evaluated using the Basic Local Alignment Search Tool ("BLAST") which is well know in the art (see, *e.g.*, Karlin and Altschul, 1990, *Proc. Natl. Acad. Sci. USA 87*:2267-2268; Altschul *et al.*, 1990, *J. Mol. Biol. 215*:403-410; Altschul *et al.*, 1993, *Nature Genetics 3*:266-272; Altschul *et al.*, 1997, *Nuc. Acids Res. 25*:3389-3402). In particular, five specific BLAST programs are used to perform the following task:

(1)BLASTP and BLAST3 compare an amino acid query sequence against a protein sequence database;

(2)BLASTN compares a nucleotide query sequence against a nucleotide sequence database;

(3)BLASTX compares the six-frame conceptual translation products of a query nucleotide sequence (both strands) against a protein sequence database;

(4)TBLASTN compares a query protein sequence against a nucleotide sequence database translated in all six reading frames (both strands); and

(5)TBLASTX compares the six-frame translations of a nucleotide query sequence against the six-frame translations of a nucleotide sequence database.

The BLAST programs identify homologous sequences by identifying similar segments, which are referred to herein as "high-scoring segment pairs," between a query amino or nucleic acid sequence and a test sequence which is preferably obtained from a protein or nucleic acid sequence database. High-scoring segment pairs are preferably identified (*i.e.*, aligned) by means of a scoring matrix, many of which are known in the art. Preferably, the scoring matrix used is the BLOSUM62 matrix (Gonnet *et al.*, 1992, *Science 256*:1443-1445; Henikoff and Henikoff, 1993, *Proteins 17*:49-61). Less preferably, the PAM or PAM250 matrices may also be used (see, *e.g.*, Schwartz and Dayhoff, eds., 1978, *Matrices for Detecting Distance Relationships: Atlas of Protein Sequence and Structure*, Washington: National Biomedical Research Foundation)

The BLAST programs evaluate the statistical significance of all high-scoring segment pairs identified, and preferably selects those segments which satisfy a user-specified threshold of significance, such as a user-specified percent homology. Preferably, the statistical significance of a high-scoring segment pair is evaluated using the statistical significance formula of Karlin (see, *e.g.*,

Karlin and Altschul, 1990, *Proc. Natl. Acad. Sci. USA 87*:2267-2268).

Equivalent amino acids may be determined either based on their structural homology with the amino acids for which they are substituted, or on results of comparative tests of biological activity between the various polypeptides which may be carried out.

By way of example, there may be mentioned the possibilities of substitutions which may be carried out without resulting in a substantial modification of the biological activity of the corresponding modified polypeptides; the replacements, for example, of leucine with valine or isoleucine, of aspartic acid with glutamic acid, of glutamine with asparagine, of arginine with lysine, and the like, the reverse substitutions naturally being feasible under the same conditions.

The homologous polypeptides also correspond to the polypeptides encoded by the homologous nucleotide sequences as defined above and thus comprise in the present definition the mutated polypeptides or polypeptides corresponding to inter- or intra-species variations which may exist in *Chlamydia*, and which correspond in particular to truncations, substitutions, deletions and/or additions of at least one amino acid residue.

Biologically active fragment of a polypeptide according to the invention will be understood to designate in particular a polypeptide fragment, as defined below, exhibiting at least one of the characteristics of the polypeptides according to the invention, in particular in that it is:

- capable of eliciting an immune response directed against *Chlamydia trachomatis*; and/or
- capable of being recognized by an antibody specific for a polypeptide according to the invention; and/or
- capable of binding to a polypeptide or to a nucleotide sequence of *Chlamydia trachomatis*; and/or
- capable of modulating, regulating, inducing or inhibiting the expression of a gene of *Chlamydia trachomatis* or one of its associated microorganisms, and/or capable of modulating the replication cycle of *Chlamydia trachomatis* or one of its associated microorganisms in the host cell and/or organism; and/or
- capable of generally exerting an even partial physiological activity, such as for example a structural activity (cellular envelope, ribosome), an enzymatic (metabolic) activity, a transport activity, an activity in the secretion or in the virulence.

A representative polypeptide fragment according to the invention is understood to designate a polypeptide comprising a minimum of 5 amino acids, preferably 10 amino acids or preferably 15 amino acids. It is to be understood that such fragments refer only to portions of polypeptides encoded by ORF2 or ORF1197 that are not currently listed in a publicly available database.

The polypeptide fragments according to the invention may correspond to isolated or

purified fragments which are naturally present in *Chlamydia trachomatis* or which are secreted by *Chlamydia trachomatis,* or may correspond to fragments capable of being obtained by cleaving the said polypeptide with a proteolytic enzyme, such as trypsin or chymotrypsin or collagenase, or with a chemical reagent, such as cyanogen bromide (CNBr) or alternatively by placing the said polypeptide in a highly acidic environment, for example at pH 2.5. Such polypeptide fragments may be equally well prepared by chemical synthesis, using hosts transformed with an expression vector according to the invention containing a nucleic acid allowing the expression of the said fragments, placed under the control of appropriate elements for regulation and/or expression.

«Modified polypeptide» of a polypeptide according to the invention is understood to designate a polypeptide obtained by genetic recombination or by chemical synthesis as will be described below, exhibiting at least one modification in relation to the normal sequence. These modifications may in particular affect amino acids responsible for a specificity or for the efficiency of the activity, or responsible for the structural conformation, for the charge or for the hydrophobicity, and for the capacity for multimerization and for membrane insertion of the polypeptide according to the invention. It is thus possible to create polypeptides with an equivalent, an increased or a reduced activity, and with an equivalent, a narrower or a broader specificity. Among the modified polypeptides, there may be mentioned the polypeptides in which up to 5 amino acids may be modified, truncated at the N- or C-terminal end, or alternatively deleted, or else added.

As is indicated, the modifications of the polypeptide may have in particular the objective:

- of making it capable of modulating, regulating, inhibiting or inducing the expression of a gene of *Chlamydia*, in particular of *Chlamydia trachomatis* and its variants, or one of its associated micro-organisms, and/or capable of modulating the replication cycle of *Chlamydia*, in particular of *Chlamydia trachomatis* and its variants, or one of its associated microorganisms, in the host cell and/or organism,
- of allowing its use in methods of biosynthesis or of biodegradation, or its incorporation into vaccine compositions,
- of modifying its bioavailability as a compound for therapeutic use.

The said modified polypeptides may also be used on any cell or microorganism for which the said modified polypeptides will be capable of modulating, regulating, inhibiting or inducing gene expression, or of modulating the growth or the replication cycle of the said cell or of the said microorganism. The methods allowing demonstration of the said modulations on eukaryotic or prokaryotic cells are well known to persons skilled in the art. The said cells or microorganisms will be chosen, in particular, from tumour cells or infectious microorganisms and the said modified polypeptides may be used for the prevention or treatment of pathologies linked to the presence of the

said cells or of the said microorganisms. It is also clearly understood that the nucleotide sequences encoding the said modified polypeptides may be used for the said modulations, for example by the intermediacy of vectors according to the invention and which are described below, so as to prevent or to treat the said pathologies.

The above modified polypeptides may be obtained using combinatory chemistry, in which it is possible to systematically vary portions of the polypeptide before testing them on models, cell cultures or microorganisms for example, so as to select the compounds which are the most active or which exhibit the desired properties.

Chemical synthesis also has the advantage of being able to use:

- nonnatural amino acids, or
- nonpeptide bonds.

Accordingly, in order to extend the life of the polypeptides according to the invention, it may be advantageous to use nonnatural amino acids, for example in the D form, or alternatively amino acid analogues, in particular sulphur-containing forms for example.

Finally, the structure of the polypeptides according to the invention, its homologous or modified forms, as well as the corresponding fragments may be integrated into chemical structures of the polypeptide type and the like. Accordingly, it may be advantageous to provide at the N- and C-terminal ends compounds which are not recognized by proteases.

Also forming part of the invention are the nucleotide sequences encoding a polypeptide according to the invention. Described below are ORF nucleotide sequences encoding polypeptides exhibiting particularly preferable characteristics. For each group of preferred ORFs described below, it is to be understood that in addition to the individual ORFs listed, in instances wherein such ORFs are present as part of «combined» ORFs, the «combined» ORFs are also to be included within the preferred group.

More particularly, the subject of the invention is nucleotide sequences, characterized in that they encode a polypeptide of the cellular envelope, preferably of the outer cellular envelope of *Chlamydia trachomatis* or one of its representative fragments, such as for example the predominant proteins of the outer membrane, the adhesion proteins or the proteins entering into the composition of the Chlamydia wall. Among these sequences, the sequences comprising a nucleotide sequence chosen from the following sequences are most preferred:

ORF3; ORF19; ORF51; ORF189; ORF212; ORF213; ORF324; ORF477; ORF478; ORF479; ORF481; ORF482; ORF483; ORF484; ORF486; ORF488; ORF489; ORF490; ORF572; ORF573; ORF742; ORF817; ORF818; ORF820; ORF1035; ORF1036; ORF1037; ORF1038; ORF1070; ORF1071; ORF1073 and one of their representative fragments.

The structure of the cytoplasmic membranes and of the wall of bacteria is dependent

on the associated proteins. The structure of the cytoplasmic membrane makes it impermeable to water, to water-soluble substances and to small-sized molecules (ions, small inorganic molecules, peptides or proteins). To enter into or to interfere with a cell or a bacterium, a ligand must establish a special relationship with a protein anchored in the cytoplasmic membrane (the receptor). These proteins which are anchored on the membrane play an important role in metabolism since they control the exchanges in the bacterium. These exchanges apply to molecules of interest for the bacterium (small molecules such as sugars and small peptides) as well as undesirable molecules for the bacterium such as antibiotics or heavy metals.

The double lipid layer structure of the membrane requires the proteins which are inserted therein to have hydrophobic domains of about twenty amino acids forming an alpha helix. Predominantly hydrophobic and potentially transmembrane regions may be predicted from the primary sequence of the proteins, itself deduced from the nucleotide sequence. The presence of one or more putative transmembrane domains raises the possibility for a protein to be associated with the cytoplasmic membrane and to be able to play an important metabolic role therein or alternatively for the protein thus exposed to be able to exhibit potentially protective epitopes.

If the proteins inserted into the membrane exhibit several transmembrane domains capable of interacting with one another via electrostatic bonds, it then becomes possible for these proteins to form pores which go across the membrane which becomes permeable for a number of substances. It should be noted that proteins which do not have transmembrane domains may also be anchored by the intermediacy of fatty acids in the cytoplasmic membrane, it being possible for the breaking of the bond between the protein and its anchor in some cases to be responsible for the release of the peptide outside the bacterium.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* transmembrane polypeptide or one of its representative fragments, having between 1 and 3 transmembrane domains and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF2; ORF3; ORF5; ORF8; ORF9; ORF10; ORF11; ORF12; ORF17; ORF21; ORF26; ORF27; ORF28; ORF29; ORF30; ORF31; ORF33; ORF35; ORF37; ORF39; ORF40; ORF41; ORF42; ORF43; ORF44; ORF45; ORF46; ORF47; ORF48; ORF49; ORF52; ORF53; ORF55; ORF56; ORF58; ORF65; ORF66; ORF68; ORF70; ORF74; ORF75; ORF76; ORF78; ORF79; ORF81; ORF82; ORF83; ORF86; ORF91; ORF92; ORF94; ORF97; ORF100; ORF102; ORF103; ORF105; ORF106; ORF107; ORF109; ORF110; ORF111; ORF112; ORF113; ORF114; ORF115; ORF116; ORF117; ORF120; ORF122; ORF123; ORF130; ORF134; ORF135; ORF137; ORF140; ORF141; ORF143; ORF144; ORF145; ORF147; ORF148; ORF149; ORF150; ORF151; ORF155; ORF156; ORF162; ORF163; ORF164; ORF165; ORF166; ORF167; ORF168; ORF169; ORF170; ORF171;

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ORF173; ORF175; ORF176; ORF177; ORF181; ORF183; ORF184; ORF186; ORF187; ORF188; ORF190; ORF191; ORF192; ORF194; ORF195; ORF196; ORF197; ORF198; ORF199; ORF201; ORF202; ORF204; ORF206; ORF207; ORF209; ORF212; ORF213; ORF217; ORF219; ORF220; ORF221; ORF222; ORF223; ORF224; ORF225; ORF227; ORF228; ORF231; ORF232; ORF234; ORF236; ORF237; ORF243; ORF244; ORF245; ORF247; ORF248; ORF249; ORF252; ORF254; ORF257; ORF260; ORF261; ORF263; ORF265; ORF266; ORF267; ORF270; ORF271; ORF272; ORF274; ORF276; ORF277; ORF278; ORF279; ORF282; ORF283; ORF284; ORF285; ORF287; ORF289; ORF290; ORF291; ORF294; ORF298; ORF305; ORF306; ORF310; ORF311; ORF313; ORF315; ORF316; ORF319; ORF320; ORF322; ORF323; ORF325; ORF326; ORF327; ORF328; ORF330; ORF331; ORF332; ORF333; ORF334; ORF335; ORF336; ORF338; ORF339; ORF340; ORF341; ORF344; ORF345; ORF348; ORF349; ORF350; ORF351; ORF352; ORF353; ORF356; ORF357; ORF358; ORF361; ORF362; ORF366; ORF367; ORF368; ORF370; ORF372; ORF373; ORF375; ORF377; ORF378; ORF379; ORF380; ORF382; ORF383; ORF384; ORF385; ORF387; ORF389; ORF390; ORF391; ORF393; ORF396; ORF398; ORF399; ORF403; ORF404; ORF406; ORF407; ORF413; ORF414; ORF417; ORF418; ORF420; ORF421; ORF424; ORF426; ORF427; ORF428; ORF430; ORF433; ORF434; ORF435; ORF436; ORF437; ORF440; ORF443; ORF446; ORF448; ORF450; ORF451; ORF454; ORF455; ORF457; ORF458; ORF459; ORF463; ORF464; ORF466; ORF467; ORF468; ORF469; ORF470; ORF473; ORF474; ORF475; ORF476; ORF477; ORF479; ORF480; ORF481; ORF483; ORF484; ORF485; ORF486; ORF487; ORF488; ORF491; ORF493; ORF496; ORF497; ORF498; ORF500; ORF501; ORF503; ORF504; ORF508; ORF512; ORF513; ORF514; ORF519; ORF521; ORF523; ORF524; ORF526; ORF527; ORF529; ORF530; ORF531; ORF532; ORF534; ORF536; ORF537; ORF538; ORF540; ORF541; ORF542; ORF543; ORF544; ORF545; ORF546; ORF547; ORF551; ORF552; ORF553; ORF555; ORF558; ORF559; ORF560; ORF561; ORF562; ORF566; ORF567; ORF568; ORF569; ORF571; ORF572; ORF574; ORF575; ORF576; ORF580; ORF582; ORF585; ORF587; ORF589; ORF592; ORF593; ORF595; ORF596; ORF597; ORF599; ORF601; ORF602; ORF603; ORF604; ORF608; ORF609; ORF610; ORF611; ORF615; ORF616; ORF617; ORF618; ORF621; ORF622; ORF623; ORF624; ORF625; ORF628; ORF632; ORF633; ORF634; ORF635; ORF637; ORF638; ORF640; ORF641; ORF643; ORF646; ORF648; ORF649; ORF651; ORF652; ORF653; ORF654; ORF655; ORF658; ORF664; ORF665; ORF666; ORF668; ORF669; ORF670; ORF671; ORF672; ORF673; ORF674; ORF676; ORF677; ORF678; ORF680; ORF682; ORF683; ORF684; ORF686; ORF688; ORF689; ORF690; ORF691; ORF692; ORF693; ORF695; ORF696; ORF698; ORF701; ORF703; ORF704; ORF705; ORF706; ORF707; ORF709; ORF710; ORF711; ORF712; ORF713; ORF714; ORF715; ORF717; ORF718; ORF720; ORF721; ORF722; ORF724; ORF726; ORF728; ORF729; ORF730; ORF731; ORF732; ORF733; ORF734; ORF737; ORF738; ORF739; ORF740; ORF742; ORF743; ORF744;

ORF745; ORF746; ORF748; ORF750; ORF751; ORF752; ORF753; ORF754; ORF755; ORF757; ORF758; ORF759; ORF760; ORF764; ORF766; ORF768; ORF769; ORF771; ORF772; ORF773; ORF774; ORF775; ORF776; ORF777; ORF778; ORF779; ORF780; ORF781; ORF782; ORF783; ORF786; ORF787; ORF788; ORF789; ORF790; ORF793; ORF798; ORF800; ORF802; ORF803; ORF806; ORF808; ORF809; ORF810; ORF811; ORF813; ORF814; ORF817; ORF820; ORF822; ORF824; ORF825; ORF827; ORF828; ORF829; ORF830; ORF833; ORF834; ORF835; ORF837; ORF838; ORF839; ORF840; ORF841; ORF842; ORF843; ORF845; ORF848; ORF849; ORF850; ORF851; ORF852; ORF854; ORF855; ORF856; ORF857; ORF859; ORF860; ORF862; ORF863; ORF864; ORF866; ORF869; ORF872; ORF873; ORF874; ORF878; ORF879; ORF880; ORF881; ORF883; ORF884; ORF885; ORF886; ORF887; ORF892; ORF893; ORF894; ORF895; ORF897; ORF899; ORF900; ORF901; ORF904; ORF906; ORF909; ORF910; ORF912; ORF914; ORF917; ORF920; ORF921; ORF922; ORF923; ORF924; ORF925; ORF926; ORF927; ORF930; ORF933; ORF934; ORF935; ORF936; ORF937; ORF940; ORF941; ORF942; ORF943; ORF944; ORF945; ORF947; ORF948; ORF951; ORF952; ORF953; ORF954; ORF955; ORF956; ORF957; ORF958; ORF960; ORF961; ORF962; ORF963; ORF964; ORF966; ORF967; ORF969; ORF970; ORF971; ORF973; ORF974; ORF979; ORF980; ORF981; ORF982; ORF984; ORF988; ORF989; ORF990; ORF991; ORF995; ORF996; ORF999; ORF1001; ORF1003; ORF1004; ORF1005; ORF1006; ORF1007; ORF1009; ORF1010; ORF1011; ORF1012; ORF1013; ORF1014; ORF1016; ORF1017; ORF1018; ORF1020; ORF1021; ORF1025; ORF1026; ORF1027; ORF1029; ORF1030; ORF1031; ORF1035; ORF1036; ORF1037; ORF1038; ORF1039; ORF1040; ORF1044; ORF1045; ORF1047; ORF1048; ORF1050; ORF1051; ORF1052; ORF1053; ORF1055; ORF1056; ORF1057; ORF1058; ORF1061; ORF1062; ORF1063; ORF1064; ORF1065; ORF1066; ORF1068; ORF1069; ORF1072; ORF1074; ORF1076 and one of their representative fragments.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* transmembrane polypeptide or one of its representative fragments, having between 4 and 6 transmembrane domains and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF7; ORF14; ORF16; ORF32; ORF34; ORF36; ORF38; ORF50; ORF57; ORF59; ORF61; ORF62; ORF63; ORF64; ORF67; ORF69; ORF72; ORF77; ORF80; ORF84; ORF87; ORF93; ORF95; ORF99; ORF108; ORF119; ORF125; ORF126; ORF129; ORF131; ORF136; ORF139; ORF146; ORF152; ORF154; ORF160; ORF161; ORF172; ORF179; ORF182; ORF185; ORF200; ORF203; ORF205; ORF239; ORF242; ORF250; ORF253; ORF256; ORF259; ORF262; ORF268; ORF275; ORF281; ORF286; ORF288; ORF292; ORF295; ORF296; ORF297; ORF299; ORF300; ORF308; ORF314; ORF317; ORF318; ORF324; ORF342; ORF343; ORF355; ORF360; ORF374; ORF376; ORF386; ORF388; ORF392; ORF394; ORF395; ORF402; ORF405; ORF411; ORF415; ORF416;

ORF422; ORF423; ORF429; ORF432; ORF441; ORF442; ORF444; ORF449; ORF452; ORF456; ORF460; ORF461; ORF465; ORF471; ORF472; ORF482; ORF489; ORF492; ORF494; ORF495; ORF502; ORF505; ORF506; ORF509; ORF516; ORF517; ORF520; ORF525; ORF533; ORF539; ORF549; ORF554; ORF557; ORF563; ORF570; ORF573; ORF581; ORF590; ORF591; ORF600; ORF607; ORF612; ORF613; ORF620; ORF626; ORF629; ORF630; ORF639; ORF644; ORF647; ORF656; ORF659; ORF661; ORF685; ORF687; ORF699; ORF700; ORF708; ORF716; ORF719; ORF725; ORF747; ORF749; ORF756; ORF765; ORF767; ORF794; ORF796; ORF797; ORF799; ORF801; ORF807; ORF821; ORF823; ORF826; ORF847; ORF853; ORF861; ORF870; ORF871; ORF875; ORF882; ORF888; ORF889; ORF898; ORF902; ORF903; ORF911; ORF916; ORF931; ORF939; ORF975; ORF976; ORF978; ORF983; ORF986; ORF987; ORF992; ORF993; ORF1000; ORF1002; ORF1008; ORF1019; ORF1022; ORF1032; ORF1034; ORF1046; ORF1054; ORF1060; ORF1071 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* transmembrane polypeptide or one of its representative fragments, having at least 7 transmembrane domains and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF4; ORF6; ORF13; ORF20; ORF51; ORF71; ORF88; ORF118; ORF128; ORF132; ORF133; ORF158; ORF159; ORF174; ORF180; ORF189; ORF210; ORF211; ORF214; ORF215; ORF226; ORF229; ORF233; ORF235; ORF240; ORF246; ORF251; ORF255; ORF273; ORF354; ORF364; ORF369; ORF371; ORF397; ORF401; ORF409; ORF412; ORF419; ORF439; ORF453; ORF462; ORF490; ORF510; ORF511; ORF518; ORF535; ORF548; ORF550; ORF564; ORF565; ORF578; ORF579; ORF614; ORF631; ORF636; ORF650; ORF662; ORF667; ORF679; ORF681; ORF702; ORF727; ORF741; ORF763; ORF791; ORF792; ORF815; ORF816; ORF832; ORF846; ORF858; ORF865; ORF867; ORF868; ORF877; ORF891; ORF896; ORF907; ORF908; ORF918; ORF919; ORF932; ORF959; ORF977; ORF994; ORF998; ORF1024; ORF1028; ORF1042; ORF1067; ORF1070; ORF1073 and one of their representative fragments.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* surface exposed polypeptide (e.g., an outer membrane protein) or one of its representative fragments, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequences:

ORF 2, ORF 3, ORF 21, ORF 22, ORF 23, ORF 53, ORF 77, ORF 187, ORF 203, ORF 383, ORF 477, ORF 478, ORF 479, ORF 481, ORF 482, ORF 483, ORF 484, ORF 485, ORF 486, ORF 487, ORF 488, ORF 489, ORF 490, ORF 571, ORF 572, ORF 573, ORF 593, ORF 670, ORF 693, ORF 742, ORF 749, ORF 801, ORF 817, ORF 818, ORF 819, ORF 820, ORF 851, ORF 902, ORF 923, ORF 1035, ORF 1036, ORF 1037, ORF 1038, ORF 1069, ORF 1070, ORF 1071, ORF 1073, ORF

1076, ORF 1095, ORF 1096, ORF 1141, ORF 1181, and their representative fragments.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* lipoprotein or one of its representative fragments, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequences:

ORF 29, ORF 42, ORF 66, ORF 72, ORF 76, ORF 78, ORF 148, ORF 154, ORF 180, ORF 182, ORF 184, ORF 187, ORF 200, ORF 242, ORF 245, ORF 250, ORF 253, ORF 272, ORF 274, ORF 275, ORF 308, ORF 350, ORF 362, ORF 383, ORF 394, ORF 396, ORF 399,

ORF 422, ORF 488, ORF 535, ORF 568, ORF 573, ORF 578, ORF 593, ORF 607, ORF 625, ORF 662, ORF 669, ORF 688, ORF 690, ORF 716, ORF 773, ORF 778, ORF 781, ORF 783, ORF 788, ORF 817, ORF 848, ORF 851, ORF 853, ORF 857, ORF 875, ORF 877, ORF 886, ORF 898, ORF 902, ORF 923, ORF 938, ORF 976, ORF 978, ORF 990, ORF 1005, ORF 1021, ORF 1035, ORF 1069, ORF 1083, ORF 1088, ORF 1089, ORF 1091, ORF 1092, ORF 1095, ORF 1096, ORF 1100, ORF 1105, ORF 1108, ORF 1117, ORF 1120, ORF 1121, ORF 1124, ORF 1128, ORF 1133, ORF 1135, ORF 1139, ORF 1140, ORF 1157, ORF 1159, ORF 1163, ORF 1165, ORF 1167, ORF 1168, ORF 1169, ORF 1171, ORF 1173, ORF 1174, ORF 1177, ORF 1180, ORF 1181, ORF 1186, ORF 1194, ORF 1197, and their representative fragments.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide involved in lipopolysaccharide (LPS) biosynthesis, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequences: ORF 17, ORF 201, ORF 691, ORF 807, ORF 936, ORF 983, ORF 1019, ORF 1077 and one of their representative fragments.

Preferably the invention relates to additional LPS-related nucleotide sequences according to the invention, characterized in that they encode:

(a) a *Chlamydia trachomatis* KDO (3-deoxy-D-manno-octulosonic acid)-related polypeptide or one of its representative fragments, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequences: ORF 41, ORF 242, ORF 269, ORF 772, and one of their representative fragments;

(b) a *Chlamydia trachomatis* phosphomannomutase-related polypeptide or one of its representative fragments, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequence: ORF 139, and one of its representative fragments;

(c) a *Chlamydia trachomatis* phosphoglucomutase-related polypeptide or one of its representative fragments, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequence: ORF 567, and one of its representative fragments; and

(d) a *Chlamydia trachomatis* lipid A component-related polypeptide or one of its

representative fragments, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequences: ORF 4, ORF 933, ORF 934, ORF 935, ORF 1185, and one of their representative fragments.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* Type III or other, non-Type III secreted polypeptides or one of its representative fragments, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequences: ORF 180, ORF 181, ORF 207, ORF 208, ORF 372, ORF 391, ORF 399, ORF 477, ORF 486, ORF 749, ORF 758, ORF 819, ORF 878, ORF 888, ORF 896, ORF 897, ORF 900, ORF 902, ORF 923, ORF 1015, ORF 1018, ORF 1059, ORF 1060, ORF 1069, ORF 1071, ORF 1073, ORF 1076, ORF 1189, and their representative fragments.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide containing RGD (Arg-Gly-Asp) attachment sites or one of its representative fragments:

(a) RGD-containing proteins that are outer membrane proteins, are more likely to play a role in cell attachment. ORFs that encoded a protein containing an RGD sequence and also were classified as outer membrane proteins are ORF 488, ORF 489, ORF 571, ORF 572, ORF 573 or ORF 716, and its representative fragments.

(b) The outer membrane of Chlamydia is made of cysteine-rich proteins that form a network of both intra and inter molecular disulfide links. This contributes to the integrity of the membrane since Chlamydia lacks the peptidoglycan layer that other gram-negative bacteria have. Cysteine-rich proteins that have the RGD sequence are also considered to be potential vaccine candidates. Cysteine-rich proteins were defined as proteins that had more than 3.0% cysteine in their primary amino acid sequence, above the mean genomic ORF cysteine content. The corresponding ORF is: ORF 1144 and one of its representative fragments.

(c) The outer membrane of Chlamydia may also contain small proteins that have cysteines in their N- and C-terminus that may contribute to the network formed by disulfide linkages. These proteins may be anchored in the outer membrane via their N-terminus and may have their C-terminus exposed, which then can interact with the host cells. Alternatively, these proteins may be anchored in the outer membrane via both N-and C-terminus and may have regions in the middle that may be exposed which can in turn interact with the host cells. ORFs encoding polypeptides that contain cysteines in their first 30 amino acids and also contain an RGD sequence are: ORF 101, ORF 122, ORF 308, ORF 488, ORF 489, ORF 571, ORF 572, ORF 573, ORF 651, ORF 679, ORF 680,

ORF 705, ORF 716, ORF 763, ORF 870, ORF 878, ORF 879, ORF 995, ORF 1028, ORF 1029, ORF 1176, and one of their representative fragments.

(d) RGD-containing ORFs homologous to RGD-containing ORFs from *Chlamydia pneumoniae* are:

ORF 28, ORF 101, ORF 125, ORF 155, ORF 156, ORF 286, ORF 571, ORF 572, ORF 573, ORF 763, ORF 870, and one of their representative fragments.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* cell wall anchored surface polypeptide or one of its representative fragments, said nucleotide sequences comprising a nucleotide sequence chosen from the following sequences: ORF 662, ORF 681, ORF 1182, ORF 1192, and their representative fragments.

Preferably, the invention relates to the nucleotide sequences according to the invention, characterized in that they encode *Chlamydia trachomatis* polypeptides not found in *Chlamydia pneumoniae* (Blastp $P>e^{-10}$), said nucleotide sequences comprising a nucleotide sequence chosen from the following sequences: ORF 2, ORF 18, ORF 60, ORF 66, ORF 67, ORF 68, ORF 69, ORF 70, ORF 81, ORF 89, ORF 107, ORF 108, ORF 109, ORF 134, ORF 147, ORF 191, ORF 194, ORF 216, ORF 217, ORF 218, ORF 219, ORF 220, ORF 221, ORF 222, ORF 223, ORF 224, ORF 225, ORF 228, ORF 235, ORF 257, ORF 276, ORF 277, ORF 278, ORF 279, ORF 280, ORF 281, ORF 282, ORF 283, ORF 284, ORF 285, ORF 289, ORF 291, ORF 298, ORF 313, ORF 314, ORF 315, ORF 316, ORF 334, ORF 335, ORF 336, ORF 337, ORF 338, ORF 339, ORF 340, ORF 381, ORF 393, ORF 413, ORF 418, ORF 419, ORF 420, ORF 421, ORF 422, ORF 423, ORF 436, ORF 460, ORF 475, ORF 476, ORF 480, ORF 485, ORF 487, ORF 491, ORF 492, ORF 493, ORF 494, ORF 496, ORF 500, ORF 504, ORF 514, ORF 527, ORF 559, ORF 569, ORF 570, ORF 575, ORF 580, ORF 582, ORF 593, ORF 598, ORF 632, ORF 640, ORF 651, ORF 671, ORF 690, ORF 694, ORF 698, ORF 710, ORF 722, ORF 723, ORF 724, ORF 770, ORF 771, ORF 782, ORF 783, ORF 784, ORF 790, ORF 795, ORF 798, ORF 805, ORF 810, ORF 817, ORF 829, ORF 830, ORF 864, ORF 866, ORF 876, ORF 887, ORF 892, ORF 899, ORF 913, ORF 921, ORF 933, ORF 938, ORF 949, ORF 956, ORF 1010, ORF 1017, ORF 1018, ORF 1027, ORF 1030, ORF 1037, ORF 1038, ORF 1047, ORF 1072, ORF 1074, ORF 1075, ORF 1078, ORF 1079, ORF 1081, ORF 1083, ORF 1084, ORF 1087, ORF 1088, ORF 1089, ORF 1091, ORF 1092, ORF 1094, ORF 1095, ORF 1096, ORF 1098, ORF 1104, ORF 1105, ORF 1106, ORF 1108, ORF 1110, ORF 1114, ORF 1115, ORF 1116, ORF 1117, ORF 1119, ORF 1128, ORF 1132, ORF 1133, ORF 1135, ORF 1136, ORF 1139, ORF 1140, ORF 1141, ORF 1142, ORF 1144, ORF 1148, ORF 1151, ORF 1155, ORF 1157, ORF 1159,

ORF 1161, ORF 1162, ORF 1165, ORF 1166, ORF 1167, ORF 1168, ORF 1169, ORF 1171, ORF 1172, ORF 1173, ORF 1174, ORF 1175, ORF 1176, ORF 1177, ORF 1178, ORF 1180, ORF 1181, ORF 1183, ORF 1184, ORF 1186, ORF 1187, ORF 1188, ORF 1192, ORF 1194, ORF 1197, and their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the intermediate metabolism, in particular in the metabolism of sugars and/or of cofactors, such as for example triose phosphate isomerase or pyruvate kinase, and in that they comprise a nucleotide sequence chosen from the following sequences: ORF10; ORF44; ORF45; ORF46; ORF47; ORF93; ORF101; ORF102; ORF103; ORF106; ORF107; ORF120; ORF121; ORF130; ORF135; ORF140; ORF143; ORF144; ORF145; ORF158; ORF159; ORF160; ORF161; ORF192; ORF193; ORF196; ORF197; ORF198; ORF199; ORF227; ORF229; ORF236; ORF236; ORF239; ORF243; ORF245; ORF264; ORF265; ORF297; ORF331; ORF333; ORF359; ORF360; ORF374; ORF404; ORF405; ORF405; ORF410; ORF415; ORF415; ORF416; ORF417; ORF432; ORF460; ORF461; ORF462; ORF495; ORF513; ORF515; ORF566; ORF566; ORF566; ORF589; ORF613; ORF645; ORF646; ORF647; ORF652; ORF653; ORF654; ORF672; ORF673; ORF674; ORF682; ORF684; ORF692; ORF700; ORF725; ORF801; ORF802; ORF835; ORF836; ORF837; ORF860; ORF861; ORF862; ORF863; ORF869; ORF869; ORF925; ORF964; ORF983 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the intermediate metabolism of nucleotides or nucleic acids, such as for example CTP synthetase or GMP synthetase, and in that they comprise a nucleotide sequence chosen from the following sequences: ORF142; ORF142; ORF169; ORF256; ORF268; ORF325; ORF352; ORF366; ORF435; ORF444; ORF528; ORF529; ORF530; ORF548; ORF549; ORF601; ORF602; ORF617; ORF619; ORF644; ORF745; ORF971; ORF972; ORF1023 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the metabolism of nucleic acids, such as for example DNA polymerases or DNA topoisomerases, and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF5; ORF12; ORF82; ORF96; ORF97; ORF98; ORF99; ORF100; ORF105; ORF118; ORF136; ORF137; ORF163; ORF190; ORF204; ORF259; ORF260; ORF262; ORF290; ORF300; ORF301; ORF302; ORF387; ORF427; ORF434; ORF441; ORF444; ORF471; ORF595; ORF596; ORF597;

ORF599; ORF600; ORF605; ORF612; ORF624; ORF625; ORF650; ORF657; ORF658; ORF702; ORF703; ORF704; ORF708; ORF719; ORF766; ORF767; ORF775; ORF779; ORF787; ORF788; ORF794; ORF841; ORF842; ORF883; ORF884; ORF907; ORF918; ORF924; ORF928; ORF929; ORF962; ORF962; ORF963; ORF969; ORF970; ORF975; ORF979; ORF995; ORF1031; ORF1032 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the metabolism of amino acids or polypeptides, such as for example serine hydroxymethyl transferase or the proteins which load amino acids onto transfer RNAs, and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF27; ORF41; ORF55; ORF56; ORF57; ORF59; ORF62; ORF63; ORF64; ORF65; ORF119; ORF132; ORF240; ORF241; ORF277; ORF278; ORF279; ORF382; ORF406; ORF428; ORF442; ORF446; ORF447; ORF453; ORF454; ORF541; ORF542; ORF591; ORF608; ORF609; ORF610; ORF618; ORF648; ORF649; ORF660; ORF661; ORF677; ORF717; ORF765; ORF797; ORF871; ORF875; ORF920; ORF922; ORF937; ORF998; ORF1020; ORF1021; ORF1034; ORF1044; ORF1046; ORF1049 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the metabolism of polypeptides, such as for example protein kinases or proteases, and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF21; ORF22; ORF23; ORF24; ORF25; ORF26; ORF75; ORF84; ORF86; ORF92; ORF133; ORF151; ORF152; ORF157; ORF179; ORF209; ORF307; ORF326; ORF343; ORF344; ORF345; ORF371; ORF429; ORF519; ORF557; ORF586; ORF587; ORF630; ORF656; ORF706; ORF707; ORF730; ORF751; ORF752; ORF786; ORF847; ORF885; ORF923; ORF978; ORF1039; ORF1048 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the metabolism of fatty acids, such as for example succinyl-CoA-synthesizing proteins or phosphatidylserine synthetase, and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF4; ORF15; ORF16; ORF141; ORF173; ORF205; ORF205; ORF206; ORF207; ORF208; ORF312; ORF355; ORF415; ORF550; ORF558; ORF560; ORF561; ORF574; ORF574; ORF577; ORF578; ORF590; ORF614; ORF772; ORF808; ORF809; ORF904; ORF905; ORF905; ORF933; ORF934; ORF934; ORF936 and one of their representative fragments.

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Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the synthesis of the wall, such as for example KDO transferase, and the proteins responsible for the attachment of certain sugars onto the exposed proteins, and in that they comprise a nucleotide sequence chosen from the following sequences:
ORF87; ORF196; ORF242; ORF269; ORF628; ORF629; ORF634; ORF635; ORF637; ORF638; ORF1019 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the transcription, translation and/or maturation process, such as for example initiation factors, RNA polymerases or certain chaperone proteins, and in that they comprise a nucleotide sequence chosen from the following sequences:
ORF112; ORF113; ORF332; ORF212; ORF213; ORF350; ORF362; ORF363; ORF364; ORF407; ORF451; ORF546; ORF643; ORF744; ORF746; ORF833; ORF868; ORF981; ORF982; ORF1003; ORF1011; ORF1042 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* ribosomal polypeptide or one of its representative fragments, such as for example the ribosomal proteins L21, L27 and S10, and in that they comprise a nucleotide sequence chosen from the following sequences:
ORF114; ORF115; ORF116; ORF328; ORF361; ORF375; ORF445; ORF543; ORF584; ORF585; ORF743; ORF813; ORF941; ORF942; ORF944; ORF946; ORF947; ORF948; ORF950; ORF951; ORF952; ORF953; ORF954; ORF955; ORF955; ORF957; ORF958; ORF960; ORF961; ORF1040; ORF1041; ORF1043; ORF1063; ORF1064 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* transport polypeptide or one of its representative fragments, such as for example the proteins for transporting amino acids, sugars and certain oligopeptides, and in that they comprise a nucleotide sequence chosen from the following sequences:
ORF6; ORF50; ORF51; ORF80; ORF125; ORF126; ORF128; ORF129; ORF215; ORF246; ORF248; ORF249; ORF251; ORF252; ORF253; ORF255; ORF271; ORF275; ORF293; ORF309; ORF323; ORF324; ORF398; ORF401; ORF449; ORF511; ORF512; ORF564; ORF565; ORF667; ORF679; ORF680; ORF711; ORF712; ORF713; ORF714; ORF715; ORF730; ORF731; ORF736; ORF737; ORF738; ORF870; ORF908; ORF919; ORF977; ORF987; ORF988; ORF992; ORF993; ORF994; ORF1028; ORF1029 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the

invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the virulence process, such as for example the proteins analogous to the *Escherichia coli* vacB protein, and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF20; ORF815; ORF816; ORF898; ORF1059; ORF1060 and one of their representative fragments.

Preferably, the invention also relates to the nucleotide sequences according to the invention, characterized in that they encode a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the secretory system and/or which is secreted, such as for example proteins homologous to proteins in the secretory system of certain bacteria such as the Salmonellae or the Yersiniae, and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF758; ORF888; ORF889; ORF890; ORF891; ORF896; ORF897; ORF898 and one of their representative fragments.

Preferably, the invention also relates to nucleotide sequences according to the invention, characterized in that they encode a polypeptide specific to Chlamydiae or one of its representative fragments, and in that they comprise a nucleotide sequence chosen from the following sequences:

ORF22; ORF29; ORF31; ORF32; ORF34; ORF35; ORF39; ORF40; ORF43; ORF48; ORF49; ORF50; ORF52; ORF53; ORF54; ORF72; ORF77; ORF78; ORF87; ORF90; ORF95; ORF108; ORF110; ORF111; ORF122; ORF123; ORF124; ORF127; ORF138; ORF144; ORF146; ORF153; ORF155; ORF164; ORF166; ORF175; ORF182; ORF184; ORF186; ORF187; ORF188; ORF202; ORF210; ORF247; ORF258; ORF266; ORF267; ORF270; ORF273; ORF274; ORF295; ORF296; ORF305; ORF306; ORF309; ORF318; ORF319; ORF322; ORF326; ORF342; ORF357; ORF376; ORF379; ORF380; ORF388; ORF390; ORF400; ORF431; ORF433; ORF438; ORF443; ORF456; ORF457; ORF458; ORF464; ORF468; ORF470; ORF473; ORF486; ORF489; ORF497; ORF501; ORF503; ORF504; ORF508; ORF512; ORF521; ORF522; ORF523; ORF524; ORF533; ORF535; ORF536; ORF537; ORF538; ORF539; ORF540; ORF554; ORF563; ORF572; ORF579; ORF595; ORF603; ORF604; ORF606; ORF607; ORF615; ORF616; ORF622; ORF641; ORF642; ORF659; ORF668; ORF670; ORF693; ORF695; ORF696; ORF699; ORF703; ORF704; ORF716; ORF726; ORF728; ORF739; ORF742; ORF747; ORF750; ORF751; ORF755; ORF757; ORF759; ORF761; ORF762; ORF763; ORF764; ORF773; ORF780; ORF781; ORF789; ORF800; ORF803; ORF804; ORF818; ORF820; ORF822; ORF823; ORF824; ORF827; ORF828; ORF839; ORF849; ORF850; ORF851; ORF852; ORF855; ORF856; ORF857; ORF858; ORF859; ORF860; ORF861; ORF862; ORF863; ORF865; ORF868; ORF869; ORF870; ORF871; ORF872; ORF873; ORF874; ORF875; ORF877; ORF878; ORF880; ORF882; ORF884; ORF886; ORF893; ORF901; ORF906; ORF910;

ORF912; ORF915; ORF916; ORF917; ORF926; ORF929; ORF933; ORF965; ORF967; ORF968; ORF984; ORF986; ORF989; ORF990; ORF996; ORF997; ORF1001; ORF1002; ORF1013; ORF1016; ORF1031; ORF1033; ORF1035; ORF1049; ORF1051; ORF1052; ORF1054; ORF1056; ORF1057; ORF1058; ORF1062; ORF1070; ORF1071; ORF1073 and one of their representative fragments.

Also forming part of the invention are polypeptides encoded by the polynucleotides of the invention, as well as fusion polypeptides comprising such polypeptides. In one embodiment, the polypeptides and fusion polypeptides immunoreact with seropositive serum of an individual infected with *Chlamydia trachomatis.* For example, described below, are polypeptide sequences exhibiting particularly preferable characteristics. For each group of preferred polypeptides described below, it is to be understood that in addition to the individual polypeptides listed, in instances wherein such polypeptides are encoded as part of «combined» ORFs, such «combined» polypeptides are also to be included within the preferred group.

The subject of the invention is also a polypeptide according to the invention, characterized in that it is a polypeptide of the cellular envelope, preferably of the outer cellular envelope, of *Chlamydia trachomatis* or one of its representative fragments. According to the invention, the said polypeptide is preferably chosen from the polypeptides having the following sequences:

SEQ ID No. 3; SEQ ID No. 19; SEQ ID No. 51; SEQ ID No. 189; SEQ ID No. 212; SEQ ID No. 213; SEQ ID No. 324; SEQ ID No. 477; SEQ ID No. 478; SEQ ID No. 479; SEQ ID No. 481; SEQ ID No. 482; SEQ ID No. 483; SEQ ID No. 484; SEQ ID No. 486; SEQ ID No. 488; SEQ ID No. 489; SEQ ID No. 490; SEQ ID No. 572; SEQ ID No. 573; SEQ ID No. 742; SEQ ID No. 817; SEQ ID No. 818; SEQ ID No. 820; SEQ ID No. 1035; SEQ ID No. 1036; SEQ ID No. 1037; SEQ ID No. 1038; SEQ ID No. 1070; SEQ ID No. 1071; SEQ ID No. 1073 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* transmembrane polypeptide or one of its representative fragments, having between 1 and 3 transmembrane domains, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 2; SEQ ID No. 3; SEQ ID No. 5; SEQ ID No. 8; SEQ ID No. 9; SEQ ID No. 10; SEQ ID No. 11; SEQ ID No. 12; SEQ ID No. 17; SEQ ID No. 21; SEQ ID No. 26; SEQ ID No. 27; SEQ ID No. 28; SEQ ID No. 29; SEQ ID No. 30; SEQ ID No. 31; SEQ ID No. 33; SEQ ID No. 35; SEQ ID No. 37; SEQ ID No. 39; SEQ ID No. 40; SEQ ID No. 41; SEQ ID No. 42; SEQ ID No. 43; SEQ ID No. 44; SEQ ID No. 45; SEQ ID No. 46; SEQ ID No. 47; SEQ ID No. 48; SEQ ID No. 49; SEQ ID No. 52; SEQ ID No. 53; SEQ ID No. 55; SEQ ID No. 56; SEQ ID No. 58; SEQ ID No. 65;

SEQ ID No. 66; SEQ ID No. 68; SEQ ID No. 70; SEQ ID No. 74; SEQ ID No. 75; SEQ ID No. 76; SEQ ID No. 78; SEQ ID No. 79; SEQ ID No. 81; SEQ ID No. 82; SEQ ID No. 83; SEQ ID No. 86; SEQ ID No. 91; SEQ ID No. 92; SEQ ID No. 94; SEQ ID No. 97; SEQ ID No. 100; SEQ ID No. 102; SEQ ID No. 103; SEQ ID No. 105; SEQ ID No. 106; SEQ ID No. 107; SEQ ID No. 109; SEQ ID No. 110; SEQ ID No. 111; SEQ ID No. 112; SEQ ID No. 113; SEQ ID No. 114; SEQ ID No. 115; SEQ ID No. 116; SEQ ID No. 117; SEQ ID No. 120; SEQ ID No. 122; SEQ ID No. 123; SEQ ID No. 130; SEQ ID No. 134; SEQ ID No. 135; SEQ ID No. 137; SEQ ID No. 140; SEQ ID No. 141; SEQ ID No. 143; SEQ ID No. 144; SEQ ID No. 145; SEQ ID No. 147; SEQ ID No. 148; SEQ ID No. 149; SEQ ID No. 150; SEQ ID No. 151; SEQ ID No. 155; SEQ ID No. 156; SEQ ID No. 162; SEQ ID No. 163; SEQ ID No. 164; SEQ ID No. 165; SEQ ID No. 166; SEQ ID No. 167; SEQ ID No. 168; SEQ ID No. 169; SEQ ID No. 170; SEQ ID No. 171; SEQ ID No. 173; SEQ ID No. 175; SEQ ID No. 176; SEQ ID No. 177; SEQ ID No. 181; SEQ ID No. 183; SEQ ID No. 184; SEQ ID No. 186; SEQ ID No. 187; SEQ ID No. 188; SEQ ID No. 190; SEQ ID No. 191; SEQ ID No. 192; SEQ ID No. 194; SEQ ID No. 195; SEQ ID No. 196; SEQ ID No. 197; SEQ ID No. 198; SEQ ID No. 199; SEQ ID No. 201; SEQ ID No. 202; SEQ ID No. 204; SEQ ID No. 206; SEQ ID No. 207; SEQ ID No. 209; SEQ ID No. 212; SEQ ID No. 213; SEQ ID No. 217; SEQ ID No. 219; SEQ ID No. 220; SEQ ID No. 221; SEQ ID No. 222; SEQ ID No. 223; SEQ ID No. 224; SEQ ID No. 225; SEQ ID No. 227; SEQ ID No. 228; SEQ ID No. 231; SEQ ID No. 232; SEQ ID No. 234; SEQ ID No. 236; SEQ ID No. 237; SEQ ID No. 243; SEQ ID No. 244; SEQ ID No. 245; SEQ ID No. 247; SEQ ID No. 248; SEQ ID No. 249; SEQ ID No. 252; SEQ ID No. 254; SEQ ID No. 257; SEQ ID No. 260; SEQ ID No. 261; SEQ ID No. 263; SEQ ID No. 265; SEQ ID No. 266; SEQ ID No. 267; SEQ ID No. 270; SEQ ID No. 271; SEQ ID No. 272; SEQ ID No. 274; SEQ ID No. 276; SEQ ID No. 277; SEQ ID No. 278; SEQ ID No. 279; SEQ ID No. 282; SEQ ID No. 283; SEQ ID No. 284; SEQ ID No. 285; SEQ ID No. 287; SEQ ID No. 289; SEQ ID No. 290; SEQ ID No. 291; SEQ ID No. 294; SEQ ID No. 298; SEQ ID No. 305; SEQ ID No. 306; SEQ ID No. 310; SEQ ID No. 311; SEQ ID No. 313; SEQ ID No. 315; SEQ ID No. 316; SEQ ID No. 319; SEQ ID No. 320; SEQ ID No. 322; SEQ ID No. 323; SEQ ID No. 325; SEQ ID No. 326; SEQ ID No. 327; SEQ ID No. 328; SEQ ID No. 330; SEQ ID No. 331; SEQ ID No. 332; SEQ ID No. 333; SEQ ID No. 334; SEQ ID No. 335; SEQ ID No. 336; SEQ ID No. 338; SEQ ID No. 339; SEQ ID No. 340; SEQ ID No. 341; SEQ ID No. 344; SEQ ID No. 345; SEQ ID No. 348; SEQ ID No. 349; SEQ ID No. 350; SEQ ID No. 351; SEQ ID No. 352; SEQ ID No. 353; SEQ ID No. 356; SEQ ID No. 357; SEQ ID No. 358; SEQ ID No. 361; SEQ ID No. 362; SEQ ID No. 366; SEQ ID No. 367; SEQ ID No. 368; SEQ ID No. 370;

SEQ ID No. 372; SEQ ID No. 373; SEQ ID No. 375; SEQ ID No. 377; SEQ ID No. 378;
SEQ ID No. 379; SEQ ID No. 380; SEQ ID No. 382; SEQ ID No. 383; SEQ ID No. 384;
SEQ ID No. 385; SEQ ID No. 387; SEQ ID No. 389; SEQ ID No. 390; SEQ ID No. 391;
SEQ ID No. 393; SEQ ID No. 396; SEQ ID No. 398; SEQ ID No. 399; SEQ ID No. 403;
SEQ ID No. 404; SEQ ID No. 406; SEQ ID No. 407; SEQ ID No. 413; SEQ ID No. 414;
SEQ ID No. 417; SEQ ID No. 418; SEQ ID No. 420; SEQ ID No. 421; SEQ ID No. 424;
SEQ ID No. 426; SEQ ID No. 427; SEQ ID No. 428; SEQ ID No. 430; SEQ ID No. 433;
SEQ ID No. 434; SEQ ID No. 435; SEQ ID No. 436; SEQ ID No. 437; SEQ ID No. 440;
SEQ ID No. 443; SEQ ID No. 446; SEQ ID No. 448; SEQ ID No. 450; SEQ ID No. 451;
SEQ ID No. 454; SEQ ID No. 455; SEQ ID No. 457; SEQ ID No. 458; SEQ ID No. 459;
SEQ ID No. 463; SEQ ID No. 464; SEQ ID No. 466; SEQ ID No. 467; SEQ ID No. 468;
SEQ ID No. 469; SEQ ID No. 470; SEQ ID No. 473; SEQ ID No. 474; SEQ ID No. 475;
SEQ ID No. 476; SEQ ID No. 477; SEQ ID No. 479; SEQ ID No. 480; SEQ ID No. 481;
SEQ ID No. 483; SEQ ID No. 484; SEQ ID No. 485; SEQ ID No. 486; SEQ ID No. 487;
SEQ ID No. 488; SEQ ID No. 491; SEQ ID No. 493; SEQ ID No. 496; SEQ ID No. 497;
SEQ ID No. 498; SEQ ID No. 500; SEQ ID No. 501; SEQ ID No. 503; SEQ ID No. 504;
SEQ ID No. 508; SEQ ID No. 512; SEQ ID No. 513; SEQ ID No. 514; SEQ ID No. 519;
SEQ ID No. 521; SEQ ID No. 523; SEQ ID No. 524; SEQ ID No. 526; SEQ ID No. 527;
SEQ ID No. 529; SEQ ID No. 530; SEQ ID No. 531; SEQ ID No. 532; SEQ ID No. 534;
SEQ ID No. 536; SEQ ID No. 537; SEQ ID No. 538; SEQ ID No. 540; SEQ ID No. 541;
SEQ ID No. 542; SEQ ID No. 543; SEQ ID No. 544; SEQ ID No. 545; SEQ ID No. 546;
SEQ ID No. 547; SEQ ID No. 551; SEQ ID No. 552; SEQ ID No. 553; SEQ ID No. 555;
SEQ ID No. 558; SEQ ID No. 559; SEQ ID No. 560; SEQ ID No. 561; SEQ ID No. 562;
SEQ ID No. 566; SEQ ID No. 567; SEQ ID No. 568; SEQ ID No. 569; SEQ ID No. 571;
SEQ ID No. 572; SEQ ID No. 574; SEQ ID No. 575; SEQ ID No. 576; SEQ ID No. 580;
SEQ ID No. 582; SEQ ID No. 585; SEQ ID No. 587; SEQ ID No. 589; SEQ ID No. 592;
SEQ ID No. 593; SEQ ID No. 595; SEQ ID No. 596; SEQ ID No. 597; SEQ ID No. 599;
SEQ ID No. 601; SEQ ID No. 602; SEQ ID No. 603; SEQ ID No. 604; SEQ ID No. 608;
SEQ ID No. 609; SEQ ID No. 610; SEQ ID No. 611; SEQ ID No. 615; SEQ ID No. 616;
SEQ ID No. 617; SEQ ID No. 618; SEQ ID No. 621; SEQ ID No. 622; SEQ ID No. 623;
SEQ ID No. 624; SEQ ID No. 625; SEQ ID No. 628; SEQ ID No. 632; SEQ ID No. 633;
SEQ ID No. 634; SEQ ID No. 635; SEQ ID No. 637; SEQ ID No. 638; SEQ ID No. 640;
SEQ ID No. 641; SEQ ID No. 643; SEQ ID No. 646; SEQ ID No. 648; SEQ ID No. 649;
SEQ ID No. 651; SEQ ID No. 652; SEQ ID No. 653; SEQ ID No. 654; SEQ ID No. 655;
SEQ ID No. 658; SEQ ID No. 664; SEQ ID No. 665; SEQ ID No. 666; SEQ ID No. 668;

SEQ ID No. 669; SEQ ID No. 670; SEQ ID No. 671; SEQ ID No. 672; SEQ ID No. 673;
SEQ ID No. 674; SEQ ID No. 676; SEQ ID No. 677; SEQ ID No. 678; SEQ ID No. 680;
SEQ ID No. 682; SEQ ID No. 683; SEQ ID No. 684; SEQ ID No. 686; SEQ ID No. 688;
SEQ ID No. 689; SEQ ID No. 690; SEQ ID No. 691; SEQ ID No. 692; SEQ ID No. 693;
SEQ ID No. 695; SEQ ID No. 696; SEQ ID No. 698; SEQ ID No. 701; SEQ ID No. 703;
SEQ ID No. 704; SEQ ID No. 705; SEQ ID No. 706; SEQ ID No. 707; SEQ ID No. 709;
SEQ ID No. 710; SEQ ID No. 711; SEQ ID No. 712; SEQ ID No. 713; SEQ ID No. 714;
SEQ ID No. 715; SEQ ID No. 717; SEQ ID No. 718; SEQ ID No. 720; SEQ ID No. 721;
SEQ ID No. 722; SEQ ID No. 724; SEQ ID No. 726; SEQ ID No. 728; SEQ ID No. 729;
SEQ ID No. 730; SEQ ID No. 731; SEQ ID No. 732; SEQ ID No. 733; SEQ ID No. 734;
SEQ ID No. 737; SEQ ID No. 738; SEQ ID No. 739; SEQ ID No. 740; SEQ ID No. 742;
SEQ ID No. 743; SEQ ID No. 744; SEQ ID No. 745; SEQ ID No. 746; SEQ ID No. 748;
SEQ ID No. 750; SEQ ID No. 751; SEQ ID No. 752; SEQ ID No. 753; SEQ ID No. 754;
SEQ ID No. 755; SEQ ID No. 757; SEQ ID No. 758; SEQ ID No. 759; SEQ ID No. 760;
SEQ ID No. 764; SEQ ID No. 766; SEQ ID No. 768; SEQ ID No. 769; SEQ ID No. 771;
SEQ ID No. 772; SEQ ID No. 773; SEQ ID No. 774; SEQ ID No. 775; SEQ ID No. 776;
SEQ ID No. 777; SEQ ID No. 778; SEQ ID No. 779; SEQ ID No. 780; SEQ ID No. 781;
SEQ ID No. 782; SEQ ID No. 783; SEQ ID No. 786; SEQ ID No. 787; SEQ ID No. 788;
SEQ ID No. 789; SEQ ID No. 790; SEQ ID No. 793; SEQ ID No. 798; SEQ ID No. 800;
SEQ ID No. 802; SEQ ID No. 803; SEQ ID No. 806; SEQ ID No. 808; SEQ ID No. 809;
SEQ ID No. 810; SEQ ID No. 811; SEQ ID No. 813; SEQ ID No. 814; SEQ ID No. 817;
SEQ ID No. 820; SEQ ID No. 822; SEQ ID No. 824; SEQ ID No. 825; SEQ ID No. 827;
SEQ ID No. 828; SEQ ID No. 829; SEQ ID No. 830; SEQ ID No. 833; SEQ ID No. 834;
SEQ ID No. 835; SEQ ID No. 837; SEQ ID No. 838; SEQ ID No. 839; SEQ ID No. 840;
SEQ ID No. 841; SEQ ID No. 842; SEQ ID No. 843; SEQ ID No. 845; SEQ ID No. 848;
SEQ ID No. 849; SEQ ID No. 850; SEQ ID No. 851; SEQ ID No. 852; SEQ ID No. 854;
SEQ ID No. 855; SEQ ID No. 856; SEQ ID No. 857; SEQ ID No. 859; SEQ ID No. 860;
SEQ ID No. 862; SEQ ID No. 863; SEQ ID No. 864; SEQ ID No. 866; SEQ ID No. 869;
SEQ ID No. 872; SEQ ID No. 873; SEQ ID No. 874; SEQ ID No. 878; SEQ ID No. 879;
SEQ ID No. 880; SEQ ID No. 881; SEQ ID No. 883; SEQ ID No. 884; SEQ ID No. 885;
SEQ ID No. 886; SEQ ID No. 887; SEQ ID No. 892; SEQ ID No. 893; SEQ ID No. 894;
SEQ ID No. 895; SEQ ID No. 897; SEQ ID No. 899; SEQ ID No. 900; SEQ ID No. 901;
SEQ ID No. 904; SEQ ID No. 906; SEQ ID No. 909; SEQ ID No. 910; SEQ ID No. 912;
SEQ ID No. 914; SEQ ID No. 917; SEQ ID No. 920; SEQ ID No. 921; SEQ ID No. 922;
SEQ ID No. 923; SEQ ID No. 924; SEQ ID No. 925; SEQ ID No. 926; SEQ ID No. 927;

SEQ ID No. 930; SEQ ID No. 933; SEQ ID No. 934; SEQ ID No. 935; SEQ ID No. 936;
SEQ ID No. 937; SEQ ID No. 940; SEQ ID No. 941; SEQ ID No. 942; SEQ ID No. 943;
SEQ ID No. 944; SEQ ID No. 945; SEQ ID No. 947; SEQ ID No. 948; SEQ ID No. 951;
SEQ ID No. 952; SEQ ID No. 953; SEQ ID No. 954; SEQ ID No. 955; SEQ ID No. 956;
SEQ ID No. 957; SEQ ID No. 958; SEQ ID No. 960; SEQ ID No. 961; SEQ ID No. 962;
SEQ ID No. 963; SEQ ID No. 964; SEQ ID No. 966; SEQ ID No. 967; SEQ ID No. 969;
SEQ ID No. 970; SEQ ID No. 971; SEQ ID No. 973; SEQ ID No. 974; SEQ ID No. 979;
SEQ ID No. 980; SEQ ID No. 981; SEQ ID No. 982; SEQ ID No. 984; SEQ ID No. 988;
SEQ ID No. 989; SEQ ID No. 990; SEQ ID No. 991; SEQ ID No. 995; SEQ ID No. 996;
SEQ ID No. 999; SEQ ID No. 1001; SEQ ID No. 1003; SEQ ID No. 1004; SEQ ID No. 1005;
SEQ ID No. 1006; SEQ ID No. 1007; SEQ ID No. 1009; SEQ ID No. 1010; SEQ ID No. 1011;
SEQ ID No. 1012; SEQ ID No. 1013; SEQ ID No. 1014; SEQ ID No. 1016; SEQ ID No. 1017;
SEQ ID No. 1018; SEQ ID No. 1020; SEQ ID No. 1021; SEQ ID No. 1025; SEQ ID No. 1026;
SEQ ID No. 1027; SEQ ID No. 1029; SEQ ID No. 1030; SEQ ID No. 1031; SEQ ID No. 1035;
SEQ ID No. 1036; SEQ ID No. 1037; SEQ ID No. 1038; SEQ ID No. 1039; SEQ ID No. 1040;
SEQ ID No. 1044; SEQ ID No. 1045; SEQ ID No. 1047; SEQ ID No. 1048; SEQ ID No. 1050;
SEQ ID No. 1051; SEQ ID No. 1052; SEQ ID No. 1053; SEQ ID No. 1055; SEQ ID No. 1056;
SEQ ID No. 1057; SEQ ID No. 1058; SEQ ID No. 1061; SEQ ID No. 1062; SEQ ID No. 1063;
SEQ ID No. 1064; SEQ ID No. 1065; SEQ ID No. 1066; SEQ ID No. 1068; SEQ ID No. 1069;
SEQ ID No. 1072; SEQ ID No. 1074; SEQ ID No. 1076 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* transmembrane polypeptide or one of its representative fragments, having between 4 and 6 transmembrane domains, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 7; SEQ ID No. 14; SEQ ID No. 16; SEQ ID No. 32; SEQ ID No. 34; SEQ ID No. 36;
SEQ ID No. 38; SEQ ID No. 50; SEQ ID No. 57; SEQ ID No. 59; SEQ ID No. 61; SEQ ID No. 62;
SEQ ID No. 63; SEQ ID No. 64; SEQ ID No. 67; SEQ ID No. 69; SEQ ID No. 72; SEQ ID No. 77;
SEQ ID No. 80; SEQ ID No. 84; SEQ ID No. 87; SEQ ID No. 93; SEQ ID No. 95; SEQ ID No. 99;
SEQ ID No. 108; SEQ ID No. 119; SEQ ID No. 125; SEQ ID No. 126; SEQ ID No. 129;
SEQ ID No. 131; SEQ ID No. 136; SEQ ID No. 139; SEQ ID No. 146; SEQ ID No. 152;
SEQ ID No. 154; SEQ ID No. 160; SEQ ID No. 161; SEQ ID No. 172; SEQ ID No. 179;
SEQ ID No. 182; SEQ ID No. 185; SEQ ID No. 200; SEQ ID No. 203; SEQ ID No. 205;
SEQ ID No. 239; SEQ ID No. 242; SEQ ID No. 250; SEQ ID No. 253; SEQ ID No. 256;
SEQ ID No. 259; SEQ ID No. 262; SEQ ID No. 268; SEQ ID No. 275; SEQ ID No. 281;
SEQ ID No. 286; SEQ ID No. 288; SEQ ID No. 292; SEQ ID No. 295; SEQ ID No. 296;

SEQ ID No. 297; SEQ ID No. 299; SEQ ID No. 300; SEQ ID No. 308; SEQ ID No. 314; SEQ ID No. 317; SEQ ID No. 318; SEQ ID No. 324; SEQ ID No. 342; SEQ ID No. 343; SEQ ID No. 355; SEQ ID No. 360; SEQ ID No. 374; SEQ ID No. 376; SEQ ID No. 386; SEQ ID No. 388; SEQ ID No. 392; SEQ ID No. 394; SEQ ID No. 395; SEQ ID No. 402; SEQ ID No. 405; SEQ ID No. 411; SEQ ID No. 415; SEQ ID No. 416; SEQ ID No. 422; SEQ ID No. 423; SEQ ID No. 429; SEQ ID No. 432; SEQ ID No. 441; SEQ ID No. 442; SEQ ID No. 444; SEQ ID No. 449; SEQ ID No. 452; SEQ ID No. 456; SEQ ID No. 460; SEQ ID No. 461; SEQ ID No. 465; SEQ ID No. 471; SEQ ID No. 472; SEQ ID No. 482; SEQ ID No. 489; SEQ ID No. 492; SEQ ID No. 494; SEQ ID No. 495; SEQ ID No. 502; SEQ ID No. 505; SEQ ID No. 506; SEQ ID No. 509; SEQ ID No. 516; SEQ ID No. 517; SEQ ID No. 520; SEQ ID No. 525; SEQ ID No. 533; SEQ ID No. 539; SEQ ID No. 549; SEQ ID No. 554; SEQ ID No. 557; SEQ ID No. 563; SEQ ID No. 570; SEQ ID No. 573; SEQ ID No. 581; SEQ ID No. 590; SEQ ID No. 591; SEQ ID No. 600; SEQ ID No. 607; SEQ ID No. 612; SEQ ID No. 613; SEQ ID No. 620; SEQ ID No. 626; SEQ ID No. 629; SEQ ID No. 630; SEQ ID No. 639; SEQ ID No. 644; SEQ ID No. 647; SEQ ID No. 656; SEQ ID No. 659; SEQ ID No. 661; SEQ ID No. 685; SEQ ID No. 687; SEQ ID No. 699; SEQ ID No. 700; SEQ ID No. 708; SEQ ID No. 716; SEQ ID No. 719; SEQ ID No. 725; SEQ ID No. 747; SEQ ID No. 749; SEQ ID No. 756; SEQ ID No. 765; SEQ ID No. 767; SEQ ID No. 794; SEQ ID No. 796; SEQ ID No. 797; SEQ ID No. 799; SEQ ID No. 801; SEQ ID No. 807; SEQ ID No. 821; SEQ ID No. 823; SEQ ID No. 826; SEQ ID No. 847; SEQ ID No. 853; SEQ ID No. 861; SEQ ID No. 870; SEQ ID No. 871; SEQ ID No. 875; SEQ ID No. 882; SEQ ID No. 888; SEQ ID No. 889; SEQ ID No. 898; SEQ ID No. 902; SEQ ID No. 903; SEQ ID No. 911; SEQ ID No. 916; SEQ ID No. 931; SEQ ID No. 939; SEQ ID No. 975; SEQ ID No. 976; SEQ ID No. 978; SEQ ID No. 983; SEQ ID No. 986; SEQ ID No. 987; SEQ ID No. 992; SEQ ID No. 993; SEQ ID No. 1000; SEQ ID No. 1002; SEQ ID No. 1008; SEQ ID No. 1019; SEQ ID No. 1022; SEQ ID No. 1032; SEQ ID No. 1034; SEQ ID No. 1046; SEQ ID No. 1054; SEQ ID No. 1060; SEQ ID No. 1071 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* transmembrane polypeptide or one of its representative fragments, having at least 7 transmembrane domains, and in that it is chosen from the polypeptides having the following sequences: SEQ ID No. 4; SEQ ID No. 6; SEQ ID No. 13; SEQ ID No. 20; SEQ ID No. 51; SEQ ID No. 71; SEQ ID No. 88; SEQ ID No. 118; SEQ ID No. 128; SEQ ID No. 132; SEQ ID No. 133; SEQ ID No. 158; SEQ ID No. 159; SEQ ID No. 174; SEQ ID No. 180; SEQ ID No. 189; SEQ ID No. 210; SEQ ID No. 211; SEQ ID No. 214;

SEQ ID No. 215; SEQ ID No. 226; SEQ ID No. 229; SEQ ID No. 233; SEQ ID No. 235; SEQ ID No. 240; SEQ ID No. 246; SEQ ID No. 251; SEQ ID No. 255; SEQ ID No. 273; SEQ ID No. 354; SEQ ID No. 364; SEQ ID No. 369; SEQ ID No. 371; SEQ ID No. 397; SEQ ID No. 401; SEQ ID No. 409; SEQ ID No. 412; SEQ ID No. 419; SEQ ID No. 439; SEQ ID No. 453; SEQ ID No. 462; SEQ ID No. 490; SEQ ID No. 510; SEQ ID No. 511; SEQ ID No. 518; SEQ ID No. 535; SEQ ID No. 548; SEQ ID No. 550; SEQ ID No. 564; SEQ ID No. 565; SEQ ID No. 578; SEQ ID No. 579; SEQ ID No. 614; SEQ ID No. 631; SEQ ID No. 636; SEQ ID No. 650; SEQ ID No. 662; SEQ ID No. 667; SEQ ID No. 679; SEQ ID No. 681; SEQ ID No. 702; SEQ ID No. 727; SEQ ID No. 741; SEQ ID No. 763; SEQ ID No. 791; SEQ ID No. 792; SEQ ID No. 815; SEQ ID No. 816; SEQ ID No. 832; SEQ ID No. 846; SEQ ID No. 858; SEQ ID No. 865; SEQ ID No. 867; SEQ ID No. 868; SEQ ID No. 877; SEQ ID No. 891; SEQ ID No. 896; SEQ ID No. 907; SEQ ID No. 908; SEQ ID No. 918; SEQ ID No. 919; SEQ ID No. 932; SEQ ID No. 959; SEQ ID No. 977; SEQ ID No. 994; SEQ ID No. 998; SEQ ID No. 1024; SEQ ID No. 1028; SEQ ID No. 1042; SEQ ID No. 1067; SEQ ID No. 1070; SEQ ID No. 1073 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it is a *Chlamydia trachomatis* surface exposed polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 2, SEQ ID No. 3, SEQ ID No. 21, SEQ ID No. 22, SEQ ID No. 23, SEQ ID No. 53, SEQ ID No. 77, SEQ ID No. 187, SEQ ID No. 203, SEQ ID No. 383, SEQ ID No. 477, SEQ ID No. 478, SEQ ID No. 479, SEQ ID No. 481, SEQ ID No. 482, SEQ ID No. 483, SEQ ID No. 484, SEQ ID No. 485, SEQ ID No. 486, SEQ ID No. 487, SEQ ID No. 488, SEQ ID No. 489, SEQ ID No. 490, SEQ ID No. 571, SEQ ID No. 572, SEQ ID No. 573, SEQ ID No. 593, SEQ ID No. 670, SEQ ID No. 693, SEQ ID No. 742, SEQ ID No. 749, SEQ ID No. 801, SEQ ID No. 817, SEQ ID No. 818, SEQ ID No. 819, SEQ ID No. 820, SEQ ID No. 851, SEQ ID No. 902, SEQ ID No. 923, SEQ ID No. 1035, SEQ ID No. 1036, SEQ ID No. 1037, SEQ ID No. 1038, SEQ ID No. 1069, SEQ ID No. 1070, SEQ ID No. 1071, SEQ ID No. 1073, SEQ ID No. 1076, SEQ ID No. 1095, SEQ ID No. 1096, SEQ ID No. 1141, SEQ ID No. 1181, and their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* lipoprotein or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 29, SEQ ID No. 42, SEQ ID No. 66, SEQ ID No. 72, SEQ ID No. 76, SEQ ID No. 78, SEQ ID No. 148, SEQ ID No. 154, SEQ ID No. 180, SEQ ID No. 182, SEQ ID No. 184, SEQ ID No. 187, SEQ ID No. 200, SEQ ID No. 242, SEQ ID No. 245, SEQ ID No. 250, SEQ ID No. 253, SEQ ID No. 272, SEQ ID No. 274, SEQ ID No. 275, SEQ ID No. 308, SEQ ID No. 350, SEQ ID No. 362,

SEQ ID No. 383, SEQ ID No. 394, SEQ ID No. 396, SEQ ID No. 399, SEQ ID No. 422, SEQ ID No. 488, SEQ ID No. 535, SEQ ID No. 568, SEQ ID No. 573, SEQ ID No. 578, SEQ ID No. 593, SEQ ID No. 607, SEQ ID No. 625, SEQ ID No. 662, SEQ ID No. 669, SEQ ID No. 688, SEQ ID No. 690, SEQ ID No. 716, SEQ ID No. 773, SEQ ID No. 778, SEQ ID No. 781, SEQ ID No. 783, SEQ ID No. 788, SEQ ID No. 817, SEQ ID No. 848, SEQ ID No. 851, SEQ ID No. 853, SEQ ID No. 857, SEQ ID No. 875, SEQ ID No. 877, SEQ ID No. 886, SEQ ID No. 898, SEQ ID No. 902, SEQ ID No. 923, SEQ ID No. 938, SEQ ID No. 976, SEQ ID No. 978, SEQ ID No. 990, SEQ ID No. 1005, SEQ ID No. 1021, SEQ ID No. 1035, SEQ ID No. 1069, SEQ ID No. 1083, SEQ ID No. 1088, SEQ ID No. 1089, SEQ ID No. 1091, SEQ ID No. 1092, SEQ ID No. 1095, SEQ ID No. 1096, SEQ ID No. 1100, SEQ ID No. 1105, SEQ ID No. 1108, SEQ ID No. 1117, SEQ ID No. 1120, SEQ ID No. 1121, SEQ ID No. 1124, SEQ ID No. 1128, SEQ ID No. 1133, SEQ ID No. 1135, SEQ ID No. 1139, SEQ ID No. 1140, SEQ ID No. 1157, SEQ ID No. 1159, SEQ ID No. 1163, SEQ ID No. 1165, SEQ ID No. 1167, SEQ ID No. 1168, SEQ ID No. 1169, SEQ ID No. 1171, SEQ ID No. 1173, SEQ ID No. 1174, SEQ ID No. 1177, SEQ ID No. 1180, SEQ ID No. 1181, SEQ ID No. 1186, SEQ ID No. 1194, SEQ ID No. 1197, and their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it is a *Chlamydia trachomatis* polypeptide involved in lipopolysaccharide (LPS) biosynthesis, and in that it is chosen from the polypeptides having the following sequences: SEQ ID No. 17, SEQ ID No. 201, SEQ ID No. 691, SEQ ID No. 807, SEQ ID No. 936, SEQ ID No. 983, SEQ ID No. 1019, SEQ ID No. 1077, and their representative fragments.

Preferably, the invention relates to additional LPS-related polypeptides according to the invention, in that it is:

(a) a *Chlamydia trachomatis* KDO (3-deoxy-D-manno-octylosonic acid)-related polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences: SEQ ID No. 41, SEQ ID No. 242, SEQ ID No. 269, SEQ ID No. 772, and one of their representative fragments;

(b) a *Chlamydia trachomatis* phosphomannomutase-related polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequence: SEQ ID No. 139, and its representative fragments;

(c) a *Chlamydia trachomatis* phosphoglucomutase-related polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequence: SEQ ID No. 567 and its representative fragments; and

(d) a *Chlamydia trachomatis* lipid A component-related polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences: SEQ ID No. 4, SEQ ID No. 933, SEQ ID No. 934, SEQ ID No. 935, SEQ ID No. 1185,

and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments that contains an RGD sequence and is also an outer membrane protein, and in that it is chosen from the polypeptides having the following sequences: SEQ. ID No. 488, SEQ ID No. 489, SEQ ID No. 571, SEQ ID No. 572, SEQ No. 573, SEQ ID No. 716 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it is a Chlamydia trachomatis polypeptide or one of its representative fragments that is cysteine-rich and contains RGD sequence, and in that it is chosen from the polypeptides having the following sequence: SEQ ID No. 144 and one of its representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it is a *Chlamydia trachomatis* outer membrane polypeptide that contains cysteines in their first 30 amino acids and also contain an RGD sequence, and in that it is chosen from the polypeptides having the following sequences: SEQ ID No. 101, SEQ ID No. 122, SEQ ID No. 308, SEQ ID No. 488, SEQ ID No. 489, SEQ ID No. 571, SEQ ID No. 572, SEQ ID No. 573, SEQ ID No. 651, SEQ ID No. 679, SEQ ID No. 680, SEQ ID No. 705, SEQ ID No. 716, SEQ ID No. 763, SEQ ID No. 870, SEQ ID No. 878, SEQ ID No. 879, SEQ ID No. 995, SEQ ID No. 1028, SEQ ID No. 1029, SEQ ID No. 1176, and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments that contains RGD sequences homologous to *Chlamydia pneumoniae* polypeptides containing RGD sequences, and in that it is chosen from the polypeptides having the following sequences: SEQ ID No. 28, SEQ ID No. 101, SEQ ID No. 125, SEQ ID No. 155, SEQ ID No. 156, SEQ ID No. 286, SEQ ID No. 571, SEQ ID No. 572, SEQ ID No. 573, SEQ ID No. 763, SEQ ID No. 870, and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it is a *Chlamydia trachomatis* Type III or non-Type III secreted polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences: SEQ ID No. 180, SEQ ID No. 181, SEQ ID No. 207, SEQ ID No. 208, SEQ ID No. 372, SEQ ID No. 391, SEQ ID No. 399, SEQ ID No. 477, SEQ ID No. 486, SEQ ID No. 749, SEQ ID No. 758, SEQ ID No. 819, SEQ ID No. 878, SEQ ID No. 888, SEQ ID No. 896, SEQ ID No. 897, SEQ ID No. 900, SEQ ID No. 902, SEQ ID No. 923, SEQ ID No. 1015, SEQ ID No. 1018, SEQ ID No. 1059, SEQ ID No. 1060, SEQ ID No. 1069, SEQ ID No. 1071, SEQ ID No. 1073, SEQ ID No. 1076, SEQ ID No. 1189, and their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it

is a *Chlamydia trachomatis* cell wall anchored surface polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences:
SEQ ID No. 662, SEQ ID No. 681, SEQ ID No. 1182, SEQ ID No. 1192, and their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments not found in *Chlamydia pneumoniae* (Blastp $P>e^{-10}$) and in that it is chosen from the polypeptides having the following sequences: SEQ ID No.2, SEQ ID No. 18, SEQ ID No. 60, SEQ ID No. 66, SEQ ID No. 67, SEQ ID No.68, SEQ ID No. 69, SEQ ID No. 70, SEQ ID No. 81, SEQ ID No. 89, SEQ ID No. 107, SEQ ID No.108, SEQ ID No. 109, SEQ ID No.134, SEQ ID No. 147, SEQ ID No.191, SEQ ID No. 194, SEQ ID No. 216, SEQ ID No. 217, SEQ ID No. 218, SEQ ID No. 219, SEQ ID No. 220, SEQ ID No. 221, SEQ ID No. 222, SEQ ID No. 222, SEQ ID No. 223, SEQ ID No. 224, SEQ ID No. 225, SEQ ID No. 228, SEQ ID No. 235, SEQ ID No.257, SEQ ID No. 276, SEQ ID No. 277, SEQ ID No. 278, SEQ ID No. 279, SEQ ID No. 280, SEQ ID No. 281, SEQ ID No. 282, SEQ ID No.283, SEQ ID No. 284, SEQ ID No. 285, SEQ ID No. 289, SEQ ID No.291, SEQ ID No. 298, SEQ ID No. 284, SEQ ID No. 313, SEQ ID No. 314, SEQ ID No. 315, SEQ ID No. 316, SEQ ID No. 334, SEQ ID No. 335, SEQ ID No. 336, SEQ ID No. 337, SEQ ID No. 338, SEQ ID No. 339, SEQ ID No. 340, SEQ ID No. 381, SEQ ID No. 393, SEQ ID No. 413, SEQ ID No. 418, SEQ ID No. 419, SEQ ID No. 419, SEQ ID No. 420, SEQ ID No. 421, SEQ ID No. 422, SEQ ID No. 423, SEQ ID No. 436, SEQ ID No. 460, SEQ ID No. 475, SEQ ID No. 476, SEQ ID No. 480, SEQ ID No. 485, SEQ ID No. 487, SEQ ID No.491, SEQ ID No. 492, SEQ ID No. 493, SEQ ID No. 494, SEQ ID No. 496, SEQ ID No. 500, SEQ ID No.504, SEQ ID No. 514, SEQ ID No. 527, SEQ ID No. 559, SEQ ID No.569, SEQ ID No. 570, SEQ ID No. 575, SEQ ID No. 580, SEQ ID No. 582, SEQ ID No. 593, SEQ ID No. 598, SEQ ID No.632, SEQ ID No.640, SEQ ID No.651, SEQ ID No.671, SEQ ID No. 690, SEQ ID No. 694, ID No. 698, SEQ ID No. 710, SEQ ID No. 722, SEQ ID No. 723, SEQ ID No. 724, SEQ ID No. 770, SEQ ID No. 771, SEQ ID No.782, SEQ ID No. 783, SEQ ID No. 784, SEQ ID No. 790, SEQ ID No. 795, SEQ ID No. 798, SEQ ID No. 805, SEQ ID No. 810, SEQ ID No. 817, SEQ ID No. 829, SEQ ID No. 830, SEQ ID No. 864, SEQ ID No. 866, SEQ ID No. 876, SEQ ID No. 887, SEQ ID No. 892, SEQ ID No. 899, SEQ ID No. 913, SEQ ID No. 921, SEQ ID No. 933, SEQ ID No. 938, SEQ ID No. 949, SEQ ID No. 956, SEQ ID No. 1010, SEQ ID No. 1017, SEQ ID No. 1018, SEQ ID No. 1027, SEQ ID No. 1030, SEQ ID No. 1037, SEQ ID No. 1038, SEQ ID No. 1047, SEQ ID No. 1072, SEQ ID No. 1074, SEQ ID No. 1075, SEQ ID No. 1078, SEQ ID No. 1079, SEQ ID No. 1081, SEQ ID No. 1083, SEQ ID No. 1084, SEQ ID No. 1087, SEQ ID No. 1088, SEQ ID No. 1089, SEQ ID No. 1091, SEQ ID No. 1092, SEQ ID No. 1094, SEQ ID No. 1095, SEQ ID No. 1096, SEQ ID No. 1098, SEQ ID No. 1104, SEQ ID No. 1105, SEQ ID No. 1106, SEQ ID No. 1108, SEQ ID No. 1110, SEQ ID No. 1114, SEQ ID No.

1115, SEQ ID No. 1116, SEQ ID No. 1117, SEQ ID No. 1119, SEQ ID No. 1128, SEQ ID No. 1132, SEQ ID No. 1133, SEQ ID No. 1135, SEQ ID No. 1136, SEQ ID No. 1139, SEQ ID No. 1140, SEQ ID No. 1141, SEQ ID No. 1142, SEQ ID No. 1144, SEQ ID No. 1148, SEQ ID No. 1151, SEQ ID No. 1155, SEQ ID No. 1157, SEQ ID No. 1159, SEQ ID No. 1161, SEQ ID No. 1162, SEQ ID No. 1165, SEQ ID No. 1166, SEQ ID No. 1167, SEQ ID No. 1168, SEQ ID No. 1169, SEQ ID No. 1171, SEQ ID No. 1172, SEQ ID No. 1173, SEQ ID No. 1174, SEQ ID No. 1175, SEQ ID No. 1176, SEQ ID No. 1177, SEQ ID No. 1178, SEQ ID No. 1180, SEQ ID No. 1181, SEQ ID No. 1183, SEQ ID No. 1184, SEQ ID No. 1186, SEQ ID No. 1187, SEQ ID No. 1188, SEQ ID No. 1192, SEQ ID No. 1194, SEQ ID No. 1197, and their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the intermediate metabolism, in particular in the metabolism of sugars and/or of cofactors, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 10; SEQ ID No. 44; SEQ ID No. 45; SEQ ID No. 46; SEQ ID No. 47; SEQ ID No. 93; SEQ ID No. 101; SEQ ID No. 102; SEQ ID No. 103; SEQ ID No. 106; SEQ ID No. 107; SEQ ID No. 120; SEQ ID No. 121; SEQ ID No. 130; SEQ ID No. 135; SEQ ID No. 140; SEQ ID No. 143; SEQ ID No. 144; SEQ ID No. 145; SEQ ID No. 158; SEQ ID No. 159; SEQ ID No. 160; SEQ ID No. 161; SEQ ID No. 192; SEQ ID No. 193; SEQ ID No. 196; SEQ ID No. 197; SEQ ID No. 198; SEQ ID No. 199; SEQ ID No. 227; SEQ ID No. 229; SEQ ID No. 236; SEQ ID No. 236; SEQ ID No. 239; SEQ ID No. 243; SEQ ID No. 245; SEQ ID No. 264; SEQ ID No. 265; SEQ ID No. 297; SEQ ID No. 331; SEQ ID No. 333; SEQ ID No. 359; SEQ ID No. 360; SEQ ID No. 374; SEQ ID No. 404; SEQ ID No. 405; SEQ ID No. 405; SEQ ID No. 410; SEQ ID No. 415; SEQ ID No. 415; SEQ ID No. 416; SEQ ID No. 417; SEQ ID No. 432; SEQ ID No. 460; SEQ ID No. 461; SEQ ID No. 462; SEQ ID No. 495; SEQ ID No. 513; SEQ ID No. 515; SEQ ID No. 566; SEQ ID No. 566; SEQ ID No. 566; SEQ ID No. 589; SEQ ID No. 613; SEQ ID No. 645; SEQ ID No. 646; SEQ ID No. 647; SEQ ID No. 652; SEQ ID No. 653; SEQ ID No. 654; SEQ ID No. 672; SEQ ID No. 673; SEQ ID No. 674; SEQ ID No. 682; SEQ ID No. 684; SEQ ID No. 692; SEQ ID No. 700; SEQ ID No. 725; SEQ ID No. 801; SEQ ID No. 802; SEQ ID No. 835; SEQ ID No. 836; SEQ ID No. 837; SEQ ID No. 860; SEQ ID No. 861; SEQ ID No. 862; SEQ ID No. 863; SEQ ID No. 869; SEQ ID No. 869; SEQ ID No. 925; SEQ ID No. 964; SEQ ID No. 983 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the intermediate metabolism of nucleotides or nucleic acids, and in that it is

chosen from the polypeptides having the following sequences:

SEQ ID No. 142; SEQ ID No. 142; SEQ ID No. 169; SEQ ID No. 256; SEQ ID No. 268; SEQ ID No. 325; SEQ ID No. 352; SEQ ID No. 366; SEQ ID No. 435; SEQ ID No. 444; SEQ ID No. 528; SEQ ID No. 529; SEQ ID No. 530; SEQ ID No. 548; SEQ ID No. 549; SEQ ID No. 601; SEQ ID No. 602; SEQ ID No. 617; SEQ ID No. 619; SEQ ID No. 644; SEQ ID No. 745; SEQ ID No. 971; SEQ ID No. 972; SEQ ID No. 1023 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the metabolism of nucleic acids, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 5; SEQ ID No. 12; SEQ ID No. 82; SEQ ID No. 96; SEQ ID No. 97; SEQ ID No. 98; SEQ ID No. 99; SEQ ID No. 100; SEQ ID No. 105; SEQ ID No. 118; SEQ ID No. 136; SEQ ID No. 137; SEQ ID No. 163; SEQ ID No. 190; SEQ ID No. 204; SEQ ID No. 259; SEQ ID No. 260; SEQ ID No. 262; SEQ ID No. 290; SEQ ID No. 300; SEQ ID No. 301; SEQ ID No. 302; SEQ ID No. 387; SEQ ID No. 427; SEQ ID No. 434; SEQ ID No. 441; SEQ ID No. 444; SEQ ID No. 471; SEQ ID No. 595; SEQ ID No. 596; SEQ ID No. 597; SEQ ID No. 599; SEQ ID No. 600; SEQ ID No. 605; SEQ ID No. 612; SEQ ID No. 624; SEQ ID No. 625; SEQ ID No. 650; SEQ ID No. 657; SEQ ID No. 658; SEQ ID No. 702; SEQ ID No. 703; SEQ ID No. 704; SEQ ID No. 708; SEQ ID No. 719; SEQ ID No. 766; SEQ ID No. 767; SEQ ID No. 775; SEQ ID No. 779; SEQ ID No. 787; SEQ ID No. 788; SEQ ID No. 794; SEQ ID No. 841; SEQ ID No. 842; SEQ ID No. 883; SEQ ID No. 884; SEQ ID No. 907; SEQ ID No. 918; SEQ ID No. 924; SEQ ID No. 928; SEQ ID No. 929; SEQ ID No. 962; SEQ ID No. 962; SEQ ID No. 963; SEQ ID No. 969; SEQ ID No. 970; SEQ ID No. 975; SEQ ID No. 979; SEQ ID No. 995; SEQ ID No. 1031; SEQ ID No. 1032 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the metabolism of amino acids or polypeptides, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 27; SEQ ID No. 41; SEQ ID No. 55; SEQ ID No. 56; SEQ ID No. 57; SEQ ID No. 59; SEQ ID No. 62; SEQ ID No. 63; SEQ ID No. 64; SEQ ID No. 65; SEQ ID No. 119; SEQ ID No. 132; SEQ ID No. 240; SEQ ID No. 241; SEQ ID No. 277; SEQ ID No. 278; SEQ ID No. 279; SEQ ID No. 382; SEQ ID No. 406; SEQ ID No. 428; SEQ ID No. 442; SEQ ID No. 446; SEQ ID No. 447; SEQ ID No. 453; SEQ ID No. 454; SEQ ID No. 541; SEQ ID No. 542;

SEQ ID No. 591; SEQ ID No. 608; SEQ ID No. 609; SEQ ID No. 610; SEQ ID No. 618; SEQ ID No. 648; SEQ ID No. 649; SEQ ID No. 660; SEQ ID No. 661; SEQ ID No. 677; SEQ ID No. 717; SEQ ID No. 765; SEQ ID No. 797; SEQ ID No. 871; SEQ ID No. 875; SEQ ID No. 920; SEQ ID No. 922; SEQ ID No. 937; SEQ ID No. 998; SEQ ID No. 1020; SEQ ID No. 1021; SEQ ID No. 1034; SEQ ID No. 1044; SEQ ID No. 1046; SEQ ID No. 1049 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the metabolism of polypeptides, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 21; SEQ ID No. 22; SEQ ID No. 23; SEQ ID No. 24; SEQ ID No. 25; SEQ ID No. 26; SEQ ID No. 75; SEQ ID No. 84; SEQ ID No. 86; SEQ ID No. 92; SEQ ID No. 133; SEQ ID No. 151; SEQ ID No. 152; SEQ ID No. 157; SEQ ID No. 179; SEQ ID No. 209; SEQ ID No. 307; SEQ ID No. 326; SEQ ID No. 343; SEQ ID No. 344; SEQ ID No. 345; SEQ ID No. 371; SEQ ID No. 429; SEQ ID No. 519; SEQ ID No. 557; SEQ ID No. 586; SEQ ID No. 587; SEQ ID No. 630; SEQ ID No. 656; SEQ ID No. 706; SEQ ID No. 707; SEQ ID No. 730; SEQ ID No. 751; SEQ ID No. 752; SEQ ID No. 786; SEQ ID No. 847; SEQ ID No. 885; SEQ ID No. 923; SEQ ID No. 978; SEQ ID No. 1039; SEQ ID No. 1048 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the metabolism of fatty acids, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 4; SEQ ID No. 15; SEQ ID No. 16; SEQ ID No. 141; SEQ ID No. 173; SEQ ID No. 205; SEQ ID No. 205; SEQ ID No. 206; SEQ ID No. 207; SEQ ID No. 208; SEQ ID No. 312; SEQ ID No. 355; SEQ ID No. 415; SEQ ID No. 550; SEQ ID No. 558; SEQ ID No. 560; SEQ ID No. 561; SEQ ID No. 574; SEQ ID No. 574; SEQ ID No. 577; SEQ ID No. 578; SEQ ID No. 590; SEQ ID No. 614; SEQ ID No. 772; SEQ ID No. 808; SEQ ID No. 809; SEQ ID No. 904; SEQ ID No. 905; SEQ ID No. 905; SEQ ID No. 933; SEQ ID No. 934; SEQ ID No. 934; SEQ ID No. 936 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the synthesis of the wall, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 87; SEQ ID No. 196; SEQ ID No. 242; SEQ ID No. 269; SEQ ID No. 628;

SEQ ID No. 629; SEQ ID No. 634; SEQ ID No. 635; SEQ ID No. 637; SEQ ID No. 638; SEQ ID No. 1019 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the transcription, translation and/or maturation process, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 112; SEQ ID No. 113; SEQ ID No. 332; SEQ ID No. 212; SEQ ID No. 213; SEQ ID No. 350; SEQ ID No. 362; SEQ ID No. 363; SEQ ID No. 364; SEQ ID No. 407; SEQ ID No. 451; SEQ ID No. 546; SEQ ID No. 643; SEQ ID No. 744; SEQ ID No. 746; SEQ ID No. 833; SEQ ID No. 868; SEQ ID No. 981; SEQ ID No. 982; SEQ ID No. 1003; SEQ ID No. 1011; SEQ ID No. 1042 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* ribosomal polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 114; SEQ ID No. 115; SEQ ID No. 116; SEQ ID No. 328; SEQ ID No. 361; SEQ ID No. 375; SEQ ID No. 445; SEQ ID No. 543; SEQ ID No. 584; SEQ ID No. 585; SEQ ID No. 743; SEQ ID No. 813; SEQ ID No. 941; SEQ ID No. 942; SEQ ID No. 944; SEQ ID No. 946; SEQ ID No. 947; SEQ ID No. 948; SEQ ID No. 950; SEQ ID No. 951; SEQ ID No. 952; SEQ ID No. 953; SEQ ID No. 954; SEQ ID No. 955; SEQ ID No. 955; SEQ ID No. 957; SEQ ID No. 958; SEQ ID No. 960; SEQ ID No. 961; SEQ ID No. 1040; SEQ ID No. 1041; SEQ ID No. 1043; SEQ ID No. 1063; SEQ ID No. 1064 and one of their fragments.

Preferably, the invention also relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* transport polypeptide or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 6; SEQ ID No. 50; SEQ ID No. 51; SEQ ID No. 80; SEQ ID No. 125; SEQ ID No. 126; SEQ ID No. 128; SEQ ID No. 129; SEQ ID No. 215; SEQ ID No. 246; SEQ ID No. 248; SEQ ID No. 249; SEQ ID No. 251; SEQ ID No. 252; SEQ ID No. 253; SEQ ID No. 255; SEQ ID No. 271; SEQ ID No. 275; SEQ ID No. 293; SEQ ID No. 309; SEQ ID No. 323; SEQ ID No. 324; SEQ ID No. 398; SEQ ID No. 401; SEQ ID No. 449; SEQ ID No. 511; SEQ ID No. 512; SEQ ID No. 564; SEQ ID No. 565; SEQ ID No. 667; SEQ ID No. 679; SEQ ID No. 680; SEQ ID No. 711; SEQ ID No. 712; SEQ ID No. 713; SEQ ID No. 714; SEQ ID No. 715; SEQ ID No. 730; SEQ ID No. 731; SEQ ID No. 736; SEQ ID No. 737; SEQ ID No. 738; SEQ ID No. 870; SEQ ID No. 908; SEQ ID No. 919; SEQ ID No. 977; SEQ ID No. 987; SEQ ID No. 988; SEQ ID No. 992; SEQ ID No. 993; SEQ ID No. 994;

SEQ ID No. 1028; SEQ ID No. 1029 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the virulence process, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 20; SEQ ID No. 815; SEQ ID No. 816; SEQ ID No. 898; SEQ ID No. 1059; SEQ ID No. 1060 and one of their representative fragments.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a *Chlamydia trachomatis* polypeptide or one of its representative fragments which is involved in the secretory system and/or which is secreted, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 758; SEQ ID No. 888; SEQ ID No. 889; SEQ ID No. 890; SEQ ID No. 891; SEQ ID No. 896; SEQ ID No. 897; SEQ ID No. 898 and one of their representative fragments.

The secreted polypeptides, including the Type III and other, non-Type III secreted polypeptides, of the present invention, as well as the corresponding nucleotide sequences, may be detected by techniques known to persons skilled in the art, such as for example the techniques using cloning combined with vectors allowing the expression of the said polypeptides fused to export markers such as the *luc* gene for luciferase or the *PhoA* gene for alkaline phosphatase.

Preferably, the invention relates to a polypeptide according to the invention, characterized in that it is a polypeptide specific to Chlamydiae or one of its representative fragments, and in that it is chosen from the polypeptides having the following sequences:

SEQ ID No. 22; SEQ ID No. 29; SEQ ID No. 31; SEQ ID No. 32; SEQ ID No. 34; SEQ ID No. 35; SEQ ID No. 39; SEQ ID No. 40; SEQ ID No. 43; SEQ ID No. 48; SEQ ID No. 49; SEQ ID No. 50; SEQ ID No. 52; SEQ ID No. 53; SEQ ID No. 54; SEQ ID No. 72; SEQ ID No. 77; SEQ ID No. 78; SEQ ID No. 87; SEQ ID No. 90; SEQ ID No. 95; SEQ ID No. 108; SEQ ID No. 110; SEQ ID No. 111; SEQ ID No. 122; SEQ ID No. 123; SEQ ID No. 124; SEQ ID No. 127; SEQ ID No. 138; SEQ ID No. 144; SEQ ID No. 146; SEQ ID No. 153; SEQ ID No. 155; SEQ ID No. 164; SEQ ID No. 166; SEQ ID No. 175; SEQ ID No. 182; SEQ ID No. 184; SEQ ID No. 186; SEQ ID No. 187; SEQ ID No. 188; SEQ ID No. 202; SEQ ID No. 210; SEQ ID No. 247; SEQ ID No. 258; SEQ ID No. 266; SEQ ID No. 267; SEQ ID No. 270; SEQ ID No. 273; SEQ ID No. 274; SEQ ID No. 295; SEQ ID No. 296; SEQ ID No. 305; SEQ ID No. 306; SEQ ID No. 309; SEQ ID No. 318; SEQ ID No. 319; SEQ ID No. 322; SEQ ID No. 326; SEQ ID No. 342; SEQ ID No. 357; SEQ ID No. 376; SEQ ID No. 379; SEQ ID No. 380; SEQ ID No. 388; SEQ ID No. 390; SEQ ID No. 400; SEQ ID No. 431; SEQ ID No. 433; SEQ ID No. 438; SEQ ID No. 443; SEQ ID No. 456; SEQ ID No. 457;

SEQ ID No. 458; SEQ ID No. 464; SEQ ID No. 468; SEQ ID No. 470; SEQ ID No. 473; SEQ ID No. 486; SEQ ID No. 489; SEQ ID No. 497; SEQ ID No. 501; SEQ ID No. 503; SEQ ID No. 504; SEQ ID No. 508; SEQ ID No. 512; SEQ ID No. 521; SEQ ID No. 522; SEQ ID No. 523; SEQ ID No. 524; SEQ ID No. 533; SEQ ID No. 535; SEQ ID No. 536; SEQ ID No. 537; SEQ ID No. 538; SEQ ID No. 539; SEQ ID No. 540; SEQ ID No. 554; SEQ ID No. 563; SEQ ID No. 572; SEQ ID No. 579; SEQ ID No. 595; SEQ ID No. 603; SEQ ID No. 604; SEQ ID No. 606; SEQ ID No. 607; SEQ ID No. 615; SEQ ID No. 616; SEQ ID No. 622; SEQ ID No. 641; SEQ ID No. 642; SEQ ID No. 659; SEQ ID No. 668; SEQ ID No. 670; SEQ ID No. 693; SEQ ID No. 695; SEQ ID No. 696; SEQ ID No. 699; SEQ ID No. 703; SEQ ID No. 704; SEQ ID No. 716; SEQ ID No. 726; SEQ ID No. 728; SEQ ID No. 739; SEQ ID No. 742; SEQ ID No. 747; SEQ ID No. 750; SEQ ID No. 751; SEQ ID No. 755; SEQ ID No. 757; SEQ ID No. 759; SEQ ID No. 761; SEQ ID No. 762; SEQ ID No. 763; SEQ ID No. 764; SEQ ID No. 773; SEQ ID No. 780; SEQ ID No. 781; SEQ ID No. 789; SEQ ID No. 800; SEQ ID No. 803; SEQ ID No. 804; SEQ ID No. 818; SEQ ID No. 820; SEQ ID No. 822; SEQ ID No. 823; SEQ ID No. 824; SEQ ID No. 827; SEQ ID No. 828; SEQ ID No. 839; SEQ ID No. 849; SEQ ID No. 850; SEQ ID No. 851; SEQ ID No. 852; SEQ ID No. 855; SEQ ID No. 856; SEQ ID No. 857; SEQ ID No. 858; SEQ ID No. 859; SEQ ID No. 860; SEQ ID No. 861; SEQ ID No. 862; SEQ ID No. 863; SEQ ID No. 865; SEQ ID No. 868; SEQ ID No. 869; SEQ ID No. 870; SEQ ID No. 871; SEQ ID No. 872; SEQ ID No. 873; SEQ ID No. 874; SEQ ID No. 875; SEQ ID No. 877; SEQ ID No. 878; SEQ ID No. 880; SEQ ID No. 882; SEQ ID No. 884; SEQ ID No. 886; SEQ ID No. 893; SEQ ID No. 901; SEQ ID No. 906; SEQ ID No. 910; SEQ ID No. 912; SEQ ID No. 915; SEQ ID No. 916; SEQ ID No. 917; SEQ ID No. 926; SEQ ID No. 929; SEQ ID No. 933; SEQ ID No. 965; SEQ ID No. 967; SEQ ID No. 968; SEQ ID No. 984; SEQ ID No. 986; SEQ ID No. 989; SEQ ID No. 990; SEQ ID No. 996; SEQ ID No. 997; SEQ ID No. 1001; SEQ ID No. 1002; SEQ ID No. 1013; SEQ ID No. 1016; SEQ ID No. 1031; SEQ ID No. 1033; SEQ ID No. 1035; SEQ ID No. 1049; SEQ ID No. 1051; SEQ ID No. 1052; SEQ ID No. 1054; SEQ ID No. 1056; SEQ ID No. 1057; SEQ ID No. 1058; SEQ ID No. 1062; SEQ ID No. 1070; SEQ ID No. 1071; SEQ ID No. 1073 and one of their representative fragments.

In general, in the present invention, the functional group to which a polypeptide of the invention belongs, as well as its corresponding nucleotide sequence, may be determined either by comparative analogy with sequences already known, or by the use of standard techniques of biochemistry, of cytology combined with the techniques of genetic engineering such as immunoaffinity, localization by immunolabelling, differential extraction, measurement of enzymatic activity, study of the activity inducing or repressing expression or the study of expression in *E. coli*.

It is clearly understood, on the one hand, that, in the present invention, the nucleotide sequences (ORF) and the amino acid sequences (SEQ ID No. 2 to SEQ ID No. 1197) which are listed by functional group, are not exhaustive within the group considered. Moreover, it is also clearly understood that, in the present invention, a nucleotide sequence (ORF) or an amino acid sequence mentioned within a given functional group may also be part of another group taking into account, for example, the interrelationship between the groups listed. Accordingly, and as an example of this interrelationship, an exported and/or secreted polypeptide as well as its coding nucleotide sequence may also be involved in the *Chlamydia trachomatis* virulence process by modifying the defense mechanism of the infected host cell, or a transmembrane polypeptide or its coding nucleotide sequence is also part of the polypeptides or coding nucleotide sequences of the cellular envelope.

The subject of the present invention is also the nucleotide and/or polypeptide sequences according to the invention, characterized in that the said sequences are recorded on a medium, called recording medium, whose type and nature facilitate the reading, the analysis and the exploitation of the said sequences. These media may of course also contain other information extracted from the present invention, such as in particular the analogies with already known sequences, such as those mentioned in Table 1 of the present description, and/or may contain, in addition, information relating to the nucleotide and/or polypeptide sequences of other microorganisms so as to facilitate the comparative analysis and the exploitation of the results obtained.

Among these recording media, computer-readable media, such as magnetic, optical, electrical and hybrid media such as, for example, floppy disks, CD-ROMs or recording cassettes, are preferred in particular.

The invention also relates to nucleotide sequences which can be used as primer or probe, characterized in that the said sequences are chosen from the nucleotide sequences according to the invention.

The invention relates, in addition, to the use of a nucleotide sequence according to the invention, as primer or probe, for the detection and/or amplification of nucleic acid sequences.

The nucleotide sequences according to the invention may thus be used to amplify nucleotide sequences, in particular by the PCR technique (polymerase chain reaction) (Erlich, 1989; Innis et al., 1990; Rolfs et al., 1991, and White et al., 1997).

These oligodeoxyribonucleotide or oligoribonucleotide primers correspond to representative nucleotide fragments, and are advantageously at least 8 nucleotides, preferably at least 12 nucleotides, 15 nucleotides and still more preferably at least 20 nucleotides long.

Other techniques for amplifying the target nucleic acid may be advantageously used as alternatives to PCR.

The nucleotide sequences of the invention, in particular the primers according to the

invention, may also be used in other methods for amplifying a target nucleic acid, such as:

- the TAS (Transcription-based Amplification System) technique described by Kwoh et al. in 1989;
- the 3SR (Self-Sustained Sequence Replication) technique described by Guatelli et al. in 1990;
- the NASBA (Nucleic Acid Sequence Based Amplification) technique described by Kievitis et al. in 1991;
- the SDA (Strand Displacement Amplification) technique (Walker et al., 1992);
- the TMA (Transcription Mediated Amplification) technique.

The polynucleotides of the invention may also be used in techniques for amplifying or for modifying the nucleic acid serving as probe, such as:

- the LCR (Ligase Chain Reaction) technique described by Landegren et al. in 1988 and perfected by Barany et al. in 1991, which uses a thermostable ligase;
- the RCR (Repair Chain Reaction) technique described by Segev in 1992;
- the CPR (Cycling Probe Reaction) technique described by Duck et al. in 1990;
- the Q-beta-replicase amplification technique described by Miele et al. in 1983 and perfected in particular by Chu et al. in 1986, Lizardi et al. in 1988, and then by Burg et al. as well as by Stone et al. in 1996.

The invention also relates to the nucleotide sequences of fragments which can be obtained by amplification with the aid of at least one primer according to the invention. The present invention encompasses both hybridization probes and primers. In general, the complementary probes should be of the length sufficient to form a stable hybrid complex with the target sequences. Primers, while complementary to the target sequences need not form stable hybridization complexes with the target sequences alone. Rather, primers form stable complexes with the target sequences in the presence of polymerase to permit extension of the primer.

In the case where the target polynucleotide to be detected is possibly an RNA, for example an mRNA, it will be possible to use, prior to the use of an amplification reaction with the aid of at least one primer according to the invention or to the use of a method of detection with the aid of at least one probe of the invention, a reverse transcriptase-type enzyme so as to obtain a cDNA from the RNA contained in the biological sample. The cDNA obtained will then serve as target for the primer(s) or the probe(s) used in the amplification or detection method according to the invention.

The detection probe will be chosen so that it hybridizes with the target sequence or the amplicon generated from the target sequence. Such a detection probe will advantageously have as sequence a sequence of at least 12 nucleotides, 15 nucleotides, in particular of at least 20 nucleotides, and preferably at least 100 nucleotides.

The invention also comprises the nucleotide sequences which can be used as probe or

primer according to the invention, characterized in that they are labelled with a radioactive compound or with a nonradioactive compound.

The nonlabelled nucleotide sequences may be used directly as probes or primers; however, the sequences are generally labelled with a radioactive element (^{32}P, ^{35}S, ^{3}H, ^{125}I) or with a nonradioactive molecule (biotin, acetylaminofluorene, digoxigenin, 5-bromo-deoxyuridine, fluorescein) so as to obtain probes which can be used in numerous applications.

Examples of nonradioactive labelling of nucleotide sequences are described, for example, in French patent No. 78,10975 or by Urdea et al. or by Sanchez-Pescador et al. in 1988.

In the latter case, one of the labelling methods described in patents FR-2 422 956 and FR-2 518 755 may also be used.

The invention also relates to the nucleotide sequences of fragments which can be obtained by hybridization with the aid of at least one probe according to the invention.

The hybridization technique may be performed in various ways (Matthews et al., 1988). The most common method consists in immobilizing the nucleic acid extracted from *C. trachomatis* cells on a support (such as nitrocellulose, nylon, polystyrene) and in incubating, under well-defined conditions, the target nucleic acid immobilized with the probe. After hybridization, the excess probe is removed and the hybrid molecules formed are detected by the appropriate method (measurement of the radioactivity, of the fluorescence or of the enzymatic activity linked to the probe).

The invention also comprises the nucleotide sequences according to the invention, characterized in that they are covalently or noncovalently immobilized on a support.

According to another advantageous embodiment of the nucleic sequences according to the invention, the latter may be used immobilized on a support and may thus serve to capture, through specific hybridization, the target nucleic acid obtained from the biological sample to be tested. If necessary, the solid support is separated from the sample and the hybridization complex formed between the so-called capture probe and the target nucleic acid is then detected by means of a second probe, called detection probe, labelled with an easily detectable element.

The nucleotide sequences according to the invention may also be used in new analytical systems, DNA chips, which allow sequencing, the study of mutations and of the expression of genes, and which are currently of interest given their very small size and their high capacity in terms of number of analyses.

The principle of the operation of these chips is based on molecular probes, most often oligonucleotides, which are attached onto a miniaturized surface, generally of the order of a few square centimetres. During an analysis, a sample containing fragments of a target nucleic acid to be analysed, for example DNA or RNA labelled, for example, after amplification, is deposited onto the

DNA chip in which the support has been coated beforehand with probes. Bringing the labelled target sequences into contact with the probes leads to the formation, through hybridization, of a duplex according to the rule of pairing defined by J.D. Watson and F. Crick. After a washing step, analysis of the surface of the chip allows the effective hybridizations to be located by means of the signals emitted by the labels tagging the target. A hybridization fingerprint results from this analysis which, by appropriate computer processing, will make it possible to determine information such as the presence of specific fragments in the sample, the determination of sequences and the presence of mutations.

The chip consists of a multitude of molecular probes, precisely organized or arrayed on a solid support whose surface is miniaturized. It is at the centre of a system where other elements (imaging system, microcomputer) allow the acquisition and interpretation of a hybridization fingerprint.

The hybridization supports are provided in the form of flat or porous surfaces (pierced with wells) composed of various materials. The choice of a support is determined by its physicochemical properties, or more precisely, by the relationship between the latter and the conditions under which the support will be placed during the synthesis or the attachment of the probes or during the use of the chip. It is therefore necessary, before considering the use of a particular support (R.S. Matson et al., 1994), to consider characteristics such as its stability to pH, its physical strength, its reactivity and its chemical stability as well as its capacity to nonspecifically bind nucleic acids. Materials such as glass, silicon and polymers are commonly used. Their surface is, in a first step, called «functionalization», made reactive towards the groups which it is desired to attach thereon. After the functionalization, so-called spacer molecules are grafted onto the activated surface. Used as intermediates between the surface and the probe, these molecules of variable size render unimportant the surface properties of the supports, which often prove to be problematic for the synthesis or the attachment of the probes and for the hybridization.

Among the hybridization supports, there may be mentioned glass which is used, for example, in the method of in situ synthesis of oligonucleotides by photochemical addressing developed by the company Affymetrix (E.L. Sheldon, 1993), the glass surface being activated by silane. Genosensor Consortium (P. Mérel, 1994) also uses glass slides carrying wells 3 mm apart, this support being activated with epoxysilane.

Polymers or silicon may also be mentioned among these hybridization supports. For example, the Andrein Mirzabekov team has developed a chip consisting of polyacrylamide squares polymerized on a silanized glass surface (G. Yershov et al., 1996). Several teams use silicon, in particular the IFOS laboratory of Ecole Centrale of Lyon which uses a silicon semiconductor substrate which is p-doped by introducing it into its crystalline structure atoms whose valency is different from

that of silicon. Various types of metals, in particular gold and platinum, may also be used as support (Genosensor Consortium (K. Beattie et al., 1993)).

The probes according to the invention may be synthesized directly in situ on the supports of the DNA chips. This in situ synthesis may be carried out by photochemical addressing (developed by the company Affymax (Amsterdam, Holland) and exploited industrially by its subsidiary Affymetrix (United States)) or based on the VLSIPS (very large scale immobilized polymer synthesis) technology (S.P.A. Fodor et al., 1991) which is based on a method of photochemically directed combinatory synthesis and the principle of which combines solid-phase chemistry, the use of photolabile protecting groups and photolithography.

The probes according to the invention may be attached to the DNA chips in various ways such as electrochemical addressing, automated addressing or the use of probe printers (T. Livache et al., 1994; G. Yershov et al., 1996; J. Derisi et al., 1996, and S. Borman, 1996).

The revealing of the hybridization between the probes of the invention, deposited or synthesized in situ on the supports of the DNA chips, and the sample to be analysed, may be determined, for example, by measurement of fluorescent signals, by radioactive counting or by electronic detection.

The use of fluorescent molecules such as fluorescein constitutes the most common method of labelling the samples. It allows direct or indirect revealing of the hybridization and allows the use of various fluorochromes.

Affymetrix currently provides an apparatus or a scanner designed to read its Gene Chip? chips. It makes it possible to detect the hybridizations by scanning the surface of the chip in confocal microscopy (R.J. Lipshutz et al., 1995). Other methods of detecting fluorescent signals have been tested: coupling of an epifluorescence microscope and a CCD camera (G. Yershov et al., 1996), the use of an optical fibre collecting system (E.L. Sheldon, 1993). A conventional method consists in carrying out an end labelling, with phosphorus 32, of the target sequences, by means of an appropriate apparatus, the Phosphorimager (marketed by Molecular Dynamics). The electronic detection is based on the principle that the hybridization of two nucleic acid molecules is accompanied by physical phenomena which can be quantified under certain conditions (system developed by Ecole Centrale of Lyon and called GEN-FET (GEN field effect transistor)). Genosensor Consortium and the company Beckman Instruments who are developing an electronic chip or Permittivity Chips? may also be mentioned (K. Beattie et al., 1993).

The nucleotide sequences according to the invention may thus be used in DNA chips to carry out the analysis of mutations. This analysis is based on the production of chips capable of analysing each base of a nucleotide sequence according to the invention. It is possible, in particular to this end, to use the microsequencing techniques on a DNA chip. The mutations are detected by

extending immobilized primers which hybridize to the template of sequences analysed, just at the position adjacent to that of the mutated nucleotide to be detected. A single-stranded template, RNA or DNA, of the sequences to be analysed will be advantageously prepared according to conventional methods, from products amplified according to PCR-type techniques. The templates of single-stranded DNA, or of RNA thus obtained are then deposited on the DNA chip, under conditions allowing their specific hybridization to the immobilized primers. A thermostable polymerase, for example Tth or T7 DNA polymerase, specifically extends the 3′ end of the immobilized primer with a labelled nucleotide analogue complementary to the nucleotide at the position of the variable site. For example a thermal cycling is performed in the presence of fluorescent dideoxyribonucleotides. The experimental conditions will be adapted in particular to the chips used, to the immobilized primers, to the polymerases used and to the labelling system chosen. One advantage of microsequencing, compared with techniques based on the hybridization of probes, is that it makes it possible to identify all the variable nucleotides with optimal discrimination under homogeneous reaction conditions; used on DNA chips, it allows optimal resolution and specificity for the routine and industrial detection of mutations in multiplex.

The nucleotide sequences according to the invention may also be used in DNA chips to carry out the analysis of the expression of the *Chlamydia trachomatis* genes. This analysis of the expression of *Chlamydia trachomatis* genes is based on the use of chips where probes of the invention, chosen for their specificity to characterize a given gene, are present (D.J. Lockhart et al., 1996; D.D. Shoemaker et al., 1996). For the methods of analysis of gene expression using the DNA chips, reference may, for example, be made to the methods described by D.J. Lockhart et al. (1996) and Sosnowsky et al. (1997) for the synthesis of probes in situ or for the addressing and the attachment of previously synthesized probes. The target sequences to be analysed are labelled and in general fragmented into sequences of about 50 to 100 nucleotides before being hybridized onto the chip. After washing as described, for example, by D.J. Lockhart et al. (1996) and application of different electric fields (Sosnowsky et al., 1997), the labelled compounds are detected and quantified, the hybridizations being carried out at least in duplicate. Comparative analyses of the signal intensities obtained with respect to the same probe for different samples and/or for different probes with the same sample, determine the differential expression of RNA or of DNA derived from the sample.

The nucleotide sequences according to the invention may, in addition, be used in DNA chips where other nucleotide probes specific for other microorganisms are also present, and may allow the carrying out of a serial test allowing rapid identification of the presence of a microorganism in a sample.

Accordingly, the subject of the invention is also the nucleotide sequences according

to the invention, characterized in that they are immobilized on a support of a DNA chip.

The DNA chips, characterized in that they contain at least one nucleotide sequence according to the invention, immobilized on the support of the said chip, also form part of the invention.

The said chips will preferably contain several probes or nucleotide sequences of the invention of different length and/or corresponding to different genes so as to identify, with greater certainty, the specificity of the target sequences or the desired mutation in the sample to be analysed.

Accordingly, the analyses carried out by means of primers and/or probes according to the invention, immobilized on supports such as DNA chips, will make it possible, for example, to identify, in samples, mutations linked to variations such as intraspecies variations. These variations may be correlated or associated with pathologies specific to the variant identified and will make it possible to select the appropriate treatment.

The invention thus comprises a DNA chip according to the invention, characterized in that it contains, in addition, at least one nucleotide sequence of a microorganism different from *Chlamydia trachomatis,* immobilized on the support of the said chip; preferably, the different microorganism will be chosen from an associated microorganism, a bacterium of the *Chlamydia* family, and a variant of the species *Chlamydia trachomatis*.

Another subject of the present invention is a vector for the cloning and/or the expression of a sequence, characterized in that it contains a nucleotide sequence according to the invention.

Among the said vectors according to the invention, the vectors containing a nucleotide sequence encoding a polypeptide of the cellular, preferably outer, envelope of *Chlamydia trachomatis* or one of its representative fragments, are preferred.

In a specific embodiment, the vectors contain a nucleotide sequence encoding a *Chlamydia trachomatis* secreted polypeptide or one of its representative fragments or encoding a transport polypeptide, a surface exposed polypeptide, a lipoprotein or one of its representative fragments, a polypeptide involved in lipopolysaccharide (LPS) biosynthesis, a Type III or non-Type III secreted polypeptide, a polypeptide containing RGD attachment sites, a cell wall anchored surface polypeptide, a polypeptide not found in *Chlamydia pneumoniae*, a ribosomal polypeptide or a polypeptide involved in secretion, transcription, translation, maturation of proteins, a polypeptide involved in the synthesis of the wall, a polypeptide involved in the virulence, a polypeptide involved in the intermediate metabolism, in particular in the metabolism of sugars and/or of cofactors, a polypeptide involved in the metabolism of nucleotides, of amino acids, of nucleic acids or of fatty acids of *Chlamydia trachomatis* or one of their representative fragments, or a polypeptide specific to Chlamydiae, are also preferred.

According to the invention, the vectors comprise the elements necessary to allow the expression and/or the secretion of the said nucleotide sequences in a given host cell, and also form part of the invention.

The vector should, in this case, comprise a promoter, signals for initiation and for termination of translation, as well as appropriate regions for regulation of transcription. It should be capable of being stably maintained in the host cell and may optionally possess particular signals specifying the secrètion of the translated protein. These different elements are chosen according to the host cell used. To this effect, the nucleotide sequences according to the invention may be inserted into autonomously-replicating vectors within the chosen host, or integrative vectors in the chosen host.

Any of the standard methods known to those skilled in the art for the insertion of DNA fragments into a vector may be used to construct expression vectors containing a chimeric gene consisting of appropriate transcriptional/translational control signals and the protein coding sequences. These methods may include *in vitro* recombinant DNA and synthetic techniques and *in vivo* recombinants (genetic recombination).

Expression of a polypeptide, peptide or derivative, or analogs thereof encoded by a polynucleotide sequence in SEQ ID No. 1 or ORFs contained within SEQ ID No. 1 may be regulated by a second nucleic acid sequence so that the protein or peptide is expressed in a host transformed with the recombinant DNA molecule. For example, expression of a protein or peptide may be controlled by any promoter/enhancer element known in the art. Promoters which may be used to control expression include, but are not limited to, the CMV promoter, the SV40 early promoter region (Bernoist and Chambon, 1981, Nature 290:304-310), the promoter contained in the 3' long terminal repeat of Rous sarcoma virus (Yamamoto, *et al.*, 1980, Cell 22:787-797), the herpes thymidine kinase promoter (Wagner *et al.*, 1981, Proc. Natl. Acad. Sci. U.S.A. 78:1441-1445), the regulatory sequences of the metallothionein gene (Brinster *et al.*, 1982, Nature 296:39-42); prokaryotic expression vectors such as the β-lactamase promoter (Villa-Kamaroff, *et al.*, 1978, Proc. Natl. Acad. Sci. U.S.A. 75:3727-3731), or the *tac* promoter (DeBoer, *et al.*, 1983, Proc. Natl. Acad. Sci. U.S.A. 80:21-25); see also "Useful proteins from recombinant bacteria" in Scientific American, 1980, 242:74-94; plant expression vectors comprising the nopaline synthetase promoter region (Herrera-Estrella *et al.*, 1983, Nature 303:209-213) or the cauliflower mosaic virus 35S RNA promoter (Gardner, *et al.*, 1981, Nucl. Acids Res. 9:2871), and the promoter of the photosynthetic enzyme ribulose biphosphate carboxylase (Herrera-Estrella *et al.*, 1984, Nature 310:115-120); promoter elements from yeast or other fungi such as the Gal 4 promoter, the ADC (alcohol dehydrogenase) promoter, PGK (phosphoglycerol kinase) promoter, alkaline phosphatase promoter, and the following animal transcriptional control regions, which exhibit tissue specificity and have been utilized in transgenic animals: elastase I gene control region which is active in pancreatic acinar cells (Swift *et al.*, 1984, Cell 38:639-646; Ornitz *et al.*,

1986, Cold Spring Harbor Symp. Quant. Biol. 50:399-409; MacDonald, 1987, Hepatology 7:425-515); insulin gene control region which is active in pancreatic beta cells (Hanahan, 1985, Nature 315:115-122), immunoglobulin gene control region which is active in lymphoid cells (Grosschedl *et al.*, 1984, Cell 38:647-658; Adames *et al.*, 1985, Nature 318:533-538; Alexander *et al.*, 1987, Mol. Cell. Biol. 7:1436-1444), mouse mammary tumor virus control region which is active in testicular, breast, lymphoid and mast cells (Leder *et al.*, 1986, Cell 45:485-495), albumin gene control region which is active in liver (Pinkert *et al.*, 1987, Genes and Devel. 1:268-276), alpha-fetoprotein gene control region which is active in liver (Krumlauf *et al.*, 1985, Mol. Cell. Biol. 5:1639-1648; Hammer *et al.*, 1987, Science 235:53-58; alpha 1-antitrypsin gene control region which is active in the liver (Kelsey *et al.*, 1987, Genes and Devel. 1:161-171), beta-globin gene control region which is active in myeloid cells (Mogram *et al.*, 1985, Nature 315:338-340; Kollias *et al.*, 1986, Cell 46:89-94; myelin basic protein gene control region which is active in oligodendrocyte cells in the brain (Readhead *et al.*, 1987, Cell 48:703-712); myosin light chain-2 gene control region which is active in skeletal muscle (Sani, 1985, Nature 314:283-286), and gonadotropic releasing hormone gene control region which is active in the hypothalamus (Mason *et al.*, 1986, Science 234:1372-1378).

The vectors according to the invention are, for example, vectors of plasmid or viral origin. In a specific embodiment, a vector is used that comprises a promoter operably linked to a protein or peptide-encoding nucleic acid sequence in SEQ ID No. 1, or ORFs contained within SEQ ID No. 1, one or more origins of replication, and, optionally, one or more selectable markers (*e.g.*, an antibiotic resistance gene). Expression vectors comprise regulatory sequences that control gene expression, including gene expression in a desired host cell. Preferred vectors for the expression of the polypeptides of the invention include the pET-type plasmid vectors (Promega) or pBAD plasmid vectors (Invitrogen). Furthermore, the vectors according to the invention are useful for transforming host cells so as to clone or express the nucleotide sequences of the invention.

Expression can also be achieved using targeted homologous recombination to activate *Chlamydia trachomatis* genes present in the cloned genomic DNA. A heterologous regulatory element may be inserted into a stable cell line or cloned microorganism, such that it is operatively linked with an endogenous *Chlamydia trachomatis* gene present in the cloned genome, using techniques, such as targeted homologous recombination, which are well known to those of skill in the art (*See*, e.g., Chappel, U.S. Patent No. 4,215,051 and Skoultchi, WO 91/06667 each of which is incorporated herein in its entirety).

Expression vector/host cell systems containing inserts of polynucleotide sequences in SEQ ID No. 1 or ORFs within SEQ ID No. 1, which encode polypeptides, peptides or derivatives, or analogs thereof, can be identified by three general approaches: (a) nucleic acid hybridization, (b) presence or absence of "marker" gene functions, and (c) expression of inserted sequences. In the first

approach, the presence of a polynucleotide sequence inserted in an expression vector can be detected by nucleic acid hybridization using probes comprising sequences that are homologous to an inserted polynucleotide sequence. In the second approach, the recombinant vector/host system can be identified and selected based upon the presence or absence of certain "marker" gene functions (*e.g.*, thymidine kinase activity, resistance to antibiotics, transformation phenotype, occlusion body formation in baculovirus, etc.) caused by the insertion of a polynucleotide sequence in the vector. For example, if the polynucleotide sequence in SEQ ID No. 1 or ORFs within SEQ ID No. 1 is inserted within the marker gene sequence of the vector, recombinants containing the insert can be identified by the absence of the marker gene function. In the third approach, recombinant expression vectors can be identified by assaying the product of the polynucleotide sequence expressed by the recombinant. Such assays can be based, for example, on the physical or functional properties of the expressed polypeptide in *in vitro* assay systems, *e.g.*, binding with antibody, promotion of cell proliferation.

Once a particular recombinant DNA molecule is identified and isolated, several methods known in the art may be used to propagate it. The clones identified may be introduced into an appropriate host cell by standard methods, such as for example lipofection, electroporation, and heat shock. Once a suitable host system and growth conditions are established, recombinant expression vectors can be propagated and prepared in quantity.

The invention also encompasses the host cells transformed by a vector according to the invention. These cells may be obtained by introducing into host cells a nucleotide sequence inserted into a vector as defined above, and then culturing the said cells under conditions allowing the replication and/or the expression of the transfected nucleotide sequence.

The host cell may be chosen from eukaryotic or prokaryotic systems, such as for example bacterial cells (Olins and Lee, 1993), but also yeast cells (Buckholz, 1993), as well as animal cells, in particular cultures of mammalian cells (Edwards and Aruffo, 1993), and in particular Chinese hamster ovary (CHO) cells, but also insect cells in which methods using baculoviruses for example may be used (Luckow, 1993).

Furthermore, a host cell strain may be chosen which modulates the expression of the inserted sequences, or modifies and processes the gene product in the specific fashion desired. Expression from certain promoters can be elevated in the presence of certain inducers; thus, expression of the genetically engineered polypeptide may be controlled. Furthermore, different host cells have characteristic and specific mechanisms for the translational and post-translational processing and modification (*e.g.*, glycosylation, phosphorylation) of proteins. Appropriate cell lines or host systems can be chosen to ensure the desired modification and processing of the foreign protein expressed. For example, expression in a bacterial system can be used to produce an unglycosylated core protein product. Expression in yeast will produce a glycosylated product. Expression in

mammalian cells can be used to ensure "native" glycosylation of a heterologous protein. Furthermore, different vector/host expression systems may effect processing reactions to different extents.

A preferred host cell for the expression of the proteins of the invention consists of prokaryotic cells, such as Gram negative bacteria.

A further preferred host cell according to the invention is a bacterium belonging to the *Chlamydia* family, more preferably belonging to the species *Chlamydia trachomatis* or chosen from a microorganism associated with the species *Chlamydia trachomatis.*

In other specific embodiments, the polypeptides, peptides or derivatives, or analogs thereof may be expressed as a fusion, or chimeric protein product (comprising the protein, fragment, analog, or derivative joined via a peptide bond to a heterologous protein sequence (of a different protein)). Such a chimeric product can be made by ligating the appropriate nucleic acid sequences encoding the desired amino acid sequences to each other by methods known in the art, in the proper coding frame, and expressing the chimeric product by methods commonly known in the art. Alternatively, such a chimeric product may be made by protein synthetic techniques, *e.g.*, by use of a peptide synthesizer.

Genomic sequences can be cloned and expressed as translational gene products (i.e., peptides, polypeptides, and proteins) or transcriptional gene products (i.e., antisense and ribozymes).

The invention further relates to the intracellular production of an antisense nucleic acid sequence of SEQ ID No. 1 by transcription from an exogenous sequence. For example, a vector can be introduced *in vivo* such that it is taken up by a cell, within which cell the vector or a portion thereof is transcribed, producing an antisense nucleic acid (RNA) of the invention. Such a vector would contain a sequence encoding an antisense nucleic acid. Such a vector can remain episomal or become chromosomally integrated, as long as it can be transcribed to produce the desired antisense RNA. Such vectors can be constructed by recombinant DNA technology methods standard in the art. Vectors can be plasmid, viral, or others known in the art, used for replication and expression in mammalian cells. Expression of the sequence encoding the antisense RNA can be by any promoter known in the art to act in mammalian, preferably human, cells. Such promoters can be inducible or constitutive. Such promoters include but are not limited to: the CMV promoter, the SV40 early promoter region (Bernoist and Chambon, 1981, Nature 290:304-310), the promoter contained in the 3_N long terminal repeat of Rous sarcoma virus (Yamamoto *et al.*, 1980, Cell 22:787-797), the herpes thymidine kinase promoter (Wagner *et al.*, 1981, Proc. Natl. Acad. Sci. U.S.A. 78:1441-1445), the regulatory sequences of the metallothionein gene (Brinster *et al.*, 1982, Nature 296:39-42), etc.

In a specific embodiment, the antisense oligonucleotide comprises catalytic RNA, or a ribozyme (see, *e.g.*, PCT International Publication WO 90/11364, published October 4, 1990; Sarver *et al.*, 1990, Science 247:1222-1225). In another embodiment, the oligonucleotide is a 2_N-0-

methylribonucleotide (Inoue *et al.*, 1987, Nucl. Acids Res. 15:6131-6148), or a chimeric RNA-DNA analog (Inoue *et al.*, 1987, FEBS Lett. 215:327-330).

In another embodiment, the antisense nucleic acids of the invention comprise a sequence complementary to at least a portion of an RNA transcript of a polynucleotide sequence in SEQ ID No. 1. However, absolute complementarity, although preferred, is not required. A sequence "complementary to at least a portion of an RNA," as referred to herein, means a sequence having sufficient complementarity to be able to hybridize with the RNA, forming a stable duplex; in the case of double-stranded antisense nucleic acid sequence, a single strand of the duplex DNA may thus be tested, or triplex formation may be assayed. The ability to hybridize will depend on both the degree of complementarity and the length of the antisense nucleic acid. Generally, the longer the hybridizing nucleic acid, the more base mismatches with an RNA transcribed from SEQ ID No. 1 may contain and still form a stable duplex (or triplex, as the case may be). One skilled in the art can ascertain a tolerable degree of mismatch by use of standard procedures to determine the melting point of the hybridized complex.

The invention also relates to the animals, except humans, comprising one of the above-described transformed cells according to the invention.

The production of transgenic animals according to the invention overexpressing one or more of the *Chlamydia trachomatis* genes will be preferably carried out on rats, mice or rabbits according to methods well known to persons skilled in the art such as viral or nonviral transfections. The transgenic animals overexpressing one or more of the said genes may be obtained by transfection of multiple copies of the said genes under the control of a powerful promoter of a ubiquitous nature, or which is selective for one type of tissue. The transgenic animals may also be obtained by homologous recombination on embryonic stem cells, transfer of these stem cells to embryos, selection of the chimeras affected at the level of the reproductive lines, and growth of the said chimeras.

The transformed cells as well as the transgenic animals according to the invention can be used in methods of preparing the recombinant polypeptide.

It is now possible to produce recombinant polypeptides in a relatively large quantity by genetic engineering using the cells transformed with expression vectors according to the invention or using transgenic animals according to the invention.

The methods of preparing a polypeptide of the invention in recombinant form, characterized in that they use a vector and/or a cell transformed with a vector according to the invention and/or a transgenic animal comprising one of the said transformed cells according to the invention, are themselves included in the present invention.

Among the said methods of preparing a polypeptide of the invention in recombinant form, the methods of preparation using a vector, and/or a cell transformed with the said vector and/or

a transgenic animal comprising one of the said transformed cells, containing a nucleotide sequence encoding a polypeptide of the cellular envelope of *Chlamydia trachomatis* or one of its representative fragments, more preferably encoding a polypeptide of the outer cellular envelope of *Chlamydia trachomatis* or one of its fragment, are preferred.

Among the said methods of preparing a polypeptide of the invention in recombinant form, the methods of preparation using a vector, and/or a cell transformed with the said vector and/or a transgenic animal comprising one of the said transformed cells, containing a nucleotide sequence encoding a *Chlamydia trachomatis* secreted polypeptide or one of its representative fragments, or encoding a transport polypeptide, a surface exposed polypeptide, a lipoprotein or one of its representative fragments, a polypeptide involved in lipopolysaccharide biosynthesis, a Type III or other secreted polypeptide, a polypeptide containing RGD attachment sites, a cell wall anchored surface polypeptide, a polypeptide not found in *Chlamydia pneumoniae,* a ribosomal polypeptide or a polypeptide involved in secretion, transcription, translation, maturation of proteins, a polypeptide involved in the synthesis of the wall, a polypeptide involved in the virulence, a polypeptide involved in the intermediate metabolism, in particular in the metabolism of sugars and/or of cofactors, a polypeptide involved in the metabolism of nucleotides, of amino acids, of nucleic acids or of fatty acids of *Chlamydia trachomatis* or one of their representative fragments, or a polypeptide specific to *Chlamydiae*, are also preferred.

The recombinant polypeptides obtained as indicated above may be provided either in glycosylated or nonglycosylated form and may or may not have the natural tertiary structure.

A preferred variant consists in producing a recombinant polypeptide fused to a «carrier» protein (chimeric protein). The advantage of this system is that it allows a stabilization and a reduction in proteolysis of the recombinant product, an increase in solubility during renaturation *in vitro* and/or a simplification of purification when the fusion partner has affinity for a specific ligand.

More particularly, the invention relates to a method of preparing a polypeptide of the invention comprising the following steps:

a) culture of the transformed cells under conditions allowing the expression of a recombinant polypeptide having a nucleic acid sequence according to the invention;

b) where appropriate, recovery of the said recombinant polypeptide.

When the method of preparing a polypeptide of the invention uses a transgenic animal according to the invention, the recombinant polypeptide is then extracted from the said animal.

The subject of the invention is also a polypeptide capable of being obtained by a method of the invention as described above.

The invention also comprises a method of preparing a synthetic polypeptide,

characterized in that it uses an amino acid sequence of polypeptides according to the invention.

The invention also relates to a synthetic polypeptide obtained by a method according to the invention.

Polypeptides according to the invention may also be prepared by conventional techniques in the field of peptide synthesis under conditions suitable to produce the polypeptides encoded by the polynucleotide of the invention. This synthesis may be carried out in and recovered from a homogeneous solution or on a solid phase.

For example, the synthesis technique in a homogeneous solution described by Houbenweyl in 1974 may be used.

This method of synthesis consists in successively condensing, in pairs, the successive amino acids in the required order, or in condensing amino acids and fragments previously formed and already containing several amino acids in the appropriate order, or alternatively several fragments thus previously prepared, it being understood that care will have been taken to protect beforehand all the reactive functional groups carried by these amino acids or fragments, with the exception of the amine functional groups of one and the carboxyl functional groups of the other or vice versa, which should normally take part in the formation of the peptide bonds, in particular after activation of the carboxyl functional group, according to methods well known in peptide synthesis.

According to another preferred technique of the invention, the one described by Merrifield is used.

To manufacture a peptide chain according to the Merrifield method, a highly porous polymer resin is used, onto which the first C-terminal amino acid of the chain is attached. This amino acid is attached onto a resin via its carboxyl group and its amine functional group is protected. The amino acids which will constitute the peptide chain are thus attached, one after another, onto the amine group, each time deprotected beforehand, of the portion of the peptide chain already formed, and which is attached to the resin. When the entire peptide chain desired is formed, the protecting groups are removed from the various amino acids constituting the peptide chain and the peptide is detached from the resin with the aid of an acid.

The invention relates, in addition, to hybrid (fusion) polypeptides having at least one polypeptide or one of its representative fragments according to the invention, and a sequence of a polypeptide capable of eliciting an immune response in humans or animals.

Advantageously, the antigenic determinant is such that it is capable of eliciting a humoral and/or cellular response.

An antigenic determinant may be identified by screening expression libraries of the *Chlamydia trachomatis* genome with antibodies contained in the serum of patients infected with a bacterium belonging to the species *Chlamydia trachomatis*. An antigenic determinant may comprise a

polypeptide or one of its fragments according to the invention, in glycosylated form, used in order to obtain immunogenic compositions capable of inducing the synthesis of antibodies directed against multiple epitopes. The said polypeptides or their glycosylated fragments also form part of the invention.

These hybrid molecules may consist, in part, of a carrier molecule for polypeptides or for their representative fragments according to the invention, combined with a portion which may be immunogenic, in particular an epitope of the diphtheria toxin, the tetanus toxin, a hepatitis B virus surface antigen (patent FR 79 21811), the poliomyelitis virus VP1 antigen or any other viral or bacterial toxin or antigen.

The methods of synthesizing the hybrid molecules include the methods used in genetic engineering to construct hybrid nucleotide sequences encoding the desired polypeptide sequences. Reference may be advantageously made, for example, to the technique for producing genes encoding fusion proteins described by Minton in 1984.

The said hybrid nucleotide sequences encoding a hybrid polypeptide as well as the hybrid polypeptides according to the invention, characterized in that they are recombinant polypeptides obtained by the expression of the said hybrid nucleotide sequences, also form part of the invention.

The invention also comprises the vectors characterized in that they contain one of the said hybrid nucleotide sequences. The host cells transformed by the said vectors, the transgenic animals comprising one of the said transformed cells as well as the methods of preparing recombinant polypeptides using the said vectors, the said transformed cells and/or the said transgenic animals of course also form part of the invention.

The polypeptides according to the invention, the antibodies according to the invention described below and the nucleotide sequences according to the invention may advantageously be used in *in vitro* and/or *in vivo* methods for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis*, in a biological sample (biological tissue or fluid) which is likely to contain them. These methods, depending on the specificity of the polypeptides, of the antibodies and of the nucleotide sequences according to the invention which will be used, may in particular detect and/or identify the bacterial variants belonging to the species *Chlamydia trachomatis* as well as the associated microorganisms capable of being detected by the polypeptides, the antibodies and the nucleotide sequences according to the invention which will be chosen. It may, for example, be advantageous to choose a polypeptide, an antibody or a nucleotide sequence according to the invention, which is capable of detecting any bacterium of the *Chlamydia* family by choosing a polypeptide, an antibody and/or a nucleotide sequence according to the invention which is specific to the family or, on the contrary, it will be most particularly advantageous to target a variant of the

species *Chlamydia trachomatis*, which is responsible, for example, for the induction or the worsening of pathologies specific to the targeted variant, by choosing a polypeptide, an antibody and/or a nucleotide sequence according to the invention which is specific to the said variant.

The polypeptides according to the invention may advantageously be used in a method for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism, in a biological sample (biological tissue or fluid) which is likely to contain them, characterized in that it comprises the following steps:

a) bringing this biological sample into contact with a polypeptide or one of its representative fragments according to the invention (under conditions allowing an immunological reaction between the said polypeptide and the antibodies which may be present in the biological sample);

b) detecting the antigen-antibody complexes which may be formed.

Preferably, the biological sample consists of a fluid, for example a human or animal serum, blood or biopsies.

Any conventional procedure may be used to carry out such a detection of the antigen-antibody complexes which may be formed.

By way of example, a preferred method uses immunoenzymatic procedures based on the ELISA technique, immunofluorescence procedures or radioimmunological procedures (RIA), and the like.

Accordingly, the invention also relates to the polypeptides according to the invention, labelled with the aid of a suitable label such as a label of the enzymatic, fluorescent or radioactive type.

Such methods comprise, for example, the following steps:

- deposition of defined quantities of a polypeptide composition according to the invention into the wells of a microtitre plate,
- introduction, into the said wells, of increasing dilutions of serum, or of a different biological sample as defined above, which has to be analysed,
- incubation of the microplate,
- introduction, into the wells of the microtitre plate, of labelled antibodies directed against human or animal immunoglobulins, these antibodies having been labelled with the aid of an enzyme selected from those which are capable of hydrolyzing a substrate, thereby modifying the absorption of the radiation of the latter, at least at a defined wavelength, for example at 550 nm,
- detection, by comparison with a control, of the quantity of substrate hydrolyzed.

The invention also relates to a kit or set for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism, characterized in that it comprises the following components:

- a polypeptide according to the invention,
- where appropriate, the reagents for constituting the medium appropriate for the immunological or specific reaction,
- the reagents allowing the detection of the antigen-antibody complexes produced by the immunological reaction between the polypeptide(s) of the invention and the antibodies which may be present in the biological sample, it being possible for these reagents also to carry a label, or to be capable of being recognized in turn by a labelled reagent, more particularly in the case where the polypeptide according to the invention is not labelled,
- where appropriate, a reference biological sample (negative control) free of antibodies recognized by a polypeptide according to the invention,
- where appropriate, a reference biological sample (positive control) containing a predetermined quantity of antibodies recognized by a polypeptide according to the invention.

According to the invention, the polypeptides, peptides, fusion proteins or other derivatives, or analogs thereof encoded by a polynucleotide sequence in SEQ ID No. 1, may be used as an immunogen to generate antibodies which immunospecifically bind such an immunogen. Such antibodies may include, but are not limited to, polyclonal and monoclonal antibodies, humanized or chimeric antibodies, single chain antibodies, Fab fragments, $F(ab')_2$ fragments, fragments produced by a Fab expression library, anti-idiotypic (anti-Id) antibodies, and epitope-binding fragments of any of the above. In a specific embodiment, the antibody to a polypeptide, peptide or other derivative, or analog thereof encoded by a polynucleotide sequence in SEQ ID No. 1 is a bispecific antibody (see generally, *e.g.* Fanger and Drakeman, 1995, *Drug News and Perspectives* 8: 133-137). Such a bispecific antibody is genetically engineered to recognize both (1) an epitope and (2) one of a variety of "trigger" molecules, *e.g.* Fc receptors on myeloid cells, and CD3 and CD2 on T cells, that have been identified as being able to cause a cytotoxic T-cell to destroy a particular target. Such bispecific antibodies can be prepared either by chemical conjugation, hybridoma, or recombinant molecular biology techniques known to the skilled artisan.

Various procedures known in the art may be used for the production of polyclonal antibodies to a polypeptide, peptide or other derivative, or analog thereof encoded by a polynucleotide sequence in SEQ ID No. 1. For the production of antibody, various host animals can be immunized by injection with a polypeptide, or peptide or other derivative, or analog thereof, including but not limited to rabbits, mice, rats, etc. Various adjuvants, depending on the host species, may be used to increase the immunological response, including but not limited to Stimulon™ QS-21 (Aquila Biopharmaceuticals, Inc., Framingham, MA), MPL™ (3-O-deacylated monophosphoryl lipid A; RIBI ImmunoChem Research, Inc., Hamilton, MT), aluminum phosphate, IL-12 (Genetics Institute, Cambridge, MA), Freund's (complete and incomplete), mineral gels such as aluminum hydroxide,

surface active substances such as lysolecithin, pluronic polyols, polyanions, peptides, oil emulsions, keyhole limpet hemocyanins, dinitrophenol, BCG (bacille Calmette-Guerin), and corynebacterium parvum. Alternatively, polyclonal antibodies may be prepared by purifying, on an affinity column onto which a polypeptide according to the invention has been previously attached, the antibodies contained in the serum of patients infected with a bacterium belonging to the species *Chlamydia trachomatis*.

For preparation of monoclonal antibodies directed toward a polypeptide, peptide or other derivative, or analog, any technique which provides for the production of antibody molecules by continuous cell lines in culture may be used. For example, the hybridoma technique originally developed by Kohler and Milstein (1975, Nature 256:495-497), as well as the trioma technique, the human B-cell hybridoma technique (Kozbor *et al.*, 1983, Immunology Today 4:72), and the EBV-hybridoma technique to produce human monoclonal antibodies (Cole *et al.*, 1985, in Monoclonal Antibodies and Cancer Therapy, Alan R. Liss, Inc., pp. 77-96). In an additional embodiment of the invention, monoclonal antibodies can be produced in germ-free animals utilizing technology described in PCT/US90/02545. In another embodiment of the invention, transgenic non-human animals can be used for the production of human antibodies utilizing technology described in WO 98/24893 and WO 96/33735. According to the invention, human antibodies may be used and can be obtained by using human hybridomas (Cote *et al.*, 1983, Proc. Natl. Acad. Sci. U.S.A. 80:2026-2030) or by transforming human B cells with EBV virus *in vitro* (Cole *et al.*, 1985, in Monoclonal Antibodies and Cancer Therapy, Alan R. Liss, pp. 77-96). In fact, according to the invention, techniques developed for the production of «chimeric antibodies», (Morrison *et al.*, 1984, PROC. NATL. ACAD. SCI. U.S.A. 81:6851-6855; Neuberger *et al.*, 1984, Nature 312:604-608; Takeda *et al.*, 1985, Nature 314:452-454) by splicing the genes from a mouse antibody molecule specific for a polypeptide, peptide or other derivative, or analog together with genes from a human antibody molecule of appropriate biological activity can be used; such antibodies are within the scope of this invention.

According to the invention, techniques described for the production of single chain antibodies (U.S. Patent 4,946,778) can be adapted to produce polypeptide or peptide-specific single chain antibodies. An additional embodiment of the invention utilizes the techniques described for the construction of Fab expression libraries (Huse *et al.*, 1989, Science 246:1275-1281) to allow rapid and easy identification of monoclonal Fab fragments with the desired specificity for polypeptides, derivatives, or analogs.

Antibody fragments which contain the idiotype of the molecule can be generated by known techniques. For example, such fragments include but are not limited to: the $F(ab')_2$ fragment which can be produced by pepsin digestion of the antibody molecule; the Fab' fragments which can be

generated by reducing the disulfide bridges of the $F(ab')_2$ fragment, the Fab fragments which can be generated by treating the antibody molecule with papain and a reducing agent, and Fv fragments.

In addition, techniques have been developed for the production of chimerized (*See*, e.g., Boss, M. et al., U.S. Patent No. 4,816,397; and Cabilly, S. et al., U.S. Patent No. 5,585,089 each of which is incorporated herein by reference in its entirety) humanized antibodies (*See*, e.g., Queen, U.S. Patent No. 5,585,089, which is incorporated herein by reference in its entirety.) An immunoglobulin light or heavy chain variable region consists of a "framework" region interrupted by three hypervariable regions, referred to as complementarily determining regions (CDRs). The extent of the framework region and CDRs have been precisely defined (See, "Sequences of Proteins of Immunological Interest", Kabat, E. et al., U.S. Department of Health and Human Services (1983)). Briefly, humanized antibodies are antibody molecules from non-human species having one or more CDRs from the non-human species and a framework from a human immunoglobulin molecule.

The antibodies of the invention may also be labelled in the same manner as described above for the nucleic probes of the invention such as an enzymatic, fluorescent or radioactive type labelling.

The invention relates, in addition, to a method for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism in a biological sample, characterized in that it comprises the following steps:

a) bringing the biological sample (biological tissue or fluid) into contact with a mono- or polyclonal antibody according to the invention (under conditions allowing an immunological reaction between the said antibodies and the polypeptides of the bacterium belonging to the species *Chlamydia trachomatis* or to an associated microorganism which may be present in the biological sample, that is, under conditions suitable for the formation of immune complexes);

b) detecting the antigen-antibody complex which may be formed.

Also falling within the scope of the invention is a kit or set for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism, characterized in that it comprises the following components:

- a polyclonal or monoclonal antibody according to the invention, labelled where appropriate;
- where appropriate, a reagent for constituting the medium appropriate for carrying out the immunological reaction;
- a reagent allowing the detection of the antigen-antibody complexes produced by the immunological reaction, it being possible for this reagent also to carry a label, or to be capable of being recognized in turn by a labelled reagent, more particularly in the case where the said monoclonal or polyclonal antibody is not labelled;
- where appropriate, reagents for carrying out the lysis of the cells in the sample tested.

The principle of the DNA chip which was explained above may also be used to produce protein «chips» on which the support has been coated with a polypeptide or an antibody according to the invention, or arrays thereof, in place of the DNA. These protein «chips» make it possible, for example, to analyse the biomolecular interactions (BIA) induced by the affinity capture of target analytes onto a support coated, for example, with proteins, by surface plasma resonance (SPR). Reference may be made, for example, to the techniques for coupling proteins onto a solid support which are described in EP 524 800 or to the methods describing the use of biosensor-type protein chips such as the BIAcore-type technique (Pharmacia) (Arlinghaus et al., 1997, Krone et al., 1997, Chatelier et al., 1995). These polypeptides or antibodies according to the invention, capable of specifically binding antibodies or polypeptides derived from the sample to be analysed, may thus be used in protein chips for the detection and/or the identification of proteins in samples. The said protein chips may in particular be used for infectious diagnosis and may preferably contain, per chip, several polypeptides and/or antibodies of the invention of different specificity, and/or polypeptides and/or antibodies capable of recognizing microorganisms different from *Chlamydia trachomatis*.

Accordingly, the subject of the present invention is also the polypeptides and the antibodies according to the invention, characterized in that they are immobilized on a support, in particular of a protein chip.

The protein chips, characterized in that they contain at least one polypeptide or one antibody according to the invention immobilized on the support of the said chip, also form part of the invention.

The invention comprises, in addition, a protein chip according to the invention, characterized in that it contains, in addition, at least one polypeptide of a microorganism different from *Chlamydia trachomatis* or at least one antibody directed against a compound of a microorganism different from *Chlamydia trachomatis,* immobilized on the support of the said chip.

The invention also relates to a kit or set for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism, or for the detection and/or the identification of a microorganism characterized in that it comprises a protein chip according to the invention.

The subject of the present invention is also a method for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism in a biological sample, characterized in that it uses a nucleotide sequence according to the invention.

More particularly, the invention relates to a method for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism in a biological sample, characterized in that it comprises the following steps:

a) where appropriate, isolation of the DNA from the biological sample to be analysed, or optionally production of a cDNA from the RNA in the biological sample;

b) specific amplification of the DNA of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism with the aid of at least one primer according to the invention;

c) detection of the amplification products.

These may be detected, for example, by the molecular hybridization technique using a nucleic probe according to the invention. This probe will be advantageously labelled with a nonradioactive (cold probe) or radioactive element.

For the purposes of the present invention, «DNA in the biological sample» or «DNA contained in the biological sample» will be understood to mean either the DNA present in the biological sample considered, or optionally the cDNA obtained after the action of a reverse transcriptase-type enzyme on the RNA present in the said biological sample.

Another aim of the present invention consists in a method according to the invention, characterized in that it comprises the following steps:

a) bringing a nucleotide probe according to the invention into contact with a biological sample, the DNA contained in the biological sample having, where appropriate, been previously made accessible to hybridization, under conditions allowing the hybridization of the probe to complementary base pairs of the DNA of a bacterium belonging to the species *Chlamydia trachomatis* or to an associated microorganism;

b) detecting the hybridization complex formed between the nucleotide probe and the DNA in the biological sample.

The present invention also relates to a method according to the invention, characterized in that it comprises the following steps:

a) bringing a nucleotide probe immobilized on a support according to the invention into contact with a biological sample, the DNA in the sample having, where appropriate, been previously made accessible to hybridization, under conditions allowing the hybridization of the probe to the DNA of a bacterium belonging to the species *Chlamydia trachomatis* or to an associated microorganism;

b) bringing the hybrid formed between the nucleotide probe immobilized on a support and the DNA contained in the biological sample, where appropriate after removal of the DNA in the biological sample which has not hybridized with the probe, into contact with a labelled nucleotide probe according to the invention;

c) detecting the new hybrid formed in step b).

According to an advantageous embodiment of the method for the detection and/or the identification defined above, it is characterized in that, prior to step a), the DNA in the biological sample is primer-extended and/or amplified beforehand with the aid of at least one primer according

to the invention.

The invention relates, in addition, to a kit or set for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism, characterized in that it comprises the following components:

a) a nucleotide probe according to the invention;

b) where appropriate, the reagents necessary for carrying out a hybridization reaction;

c) where appropriate, at least one primer according to the invention as well as the reagents (*e.g.*, polymerase and/or deoxynucleotide triphosphates) necessary for a DNA amplification reaction.

The invention also relates to a kit or set for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism, characterized in that it comprises the following components:

a) a nucleotide probe, called capture probe, according to the invention;

b) an oligonucleotide probe, called detection probe, according to the invention;

c) where appropriate, at least one primer according to the invention as well as the reagents (*e.g.*, polymerase and/or deoxynucleotide triphosphates) necessary for a DNA amplification reaction.

The invention also relates to a kit or set for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism, characterized in that it comprises the following components:

a) at least one primer according to the invention;

b) where appropriate, the reagents necessary for carrying out a DNA amplification reaction;

c) where appropriate, a component which makes it possible to check the sequence of the amplified fragment, more particularly an oligonucleotide probe according to the invention.

The invention relates, in addition, to a kit or set for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* or to an associated microorganism, or for the detection and/or the identification of a microorganism characterized in that it comprises a DNA chip according to the invention.

The invention also relates to a method or to a kit or set according to the invention for the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis*, characterized in that the said primer and/or the said probe according to the invention are chosen from the nucleotide sequences specific to the species *Chlamydia trachomatis*, in that the said polypeptides according to the invention are chosen from the polypeptides specific to the species *Chlamydia trachomatis* and in that the said antibodies according to the invention are chosen from the antibodies directed against the polypeptides according to the invention chosen from the polypeptides specific to the species *Chlamydia trachomatis*.

Preferably, the said method or the said kit or set above according to the invention, for

the detection and/or the identification of bacteria belonging to the species *Chlamydia trachomatis* is characterized in that the said primer and/or the said probe or the said polypeptides are chosen from the nucleotide sequences or polypeptides according to the invention which have been identified as being specific to the species *Chlamydia trachomatis* and in that the said antibodies according to the invention are chosen from the antibodies directed against the polypeptides according to the invention chosen from the polypeptides identified as being specific to the species *Chlamydia trachomatis.*

The invention relates, in addition, to a method or a kit or set according to the invention for the diagnosis of predispositions to, or of a condition caused by, genital diseases which are induced or worsened by a *Chlamydia trachomatis* infection.

The invention also relates to a method or a kit or set according to the invention for the diagnosis of predispositions to, or of conditions caused by, eye diseases induced or worsened by a *Chlamydia trachomatis* infection.

The invention also relates to a method or a kit or set according to the invention for the diagnosis of predispositions to, or of conditions caused by, systemic diseases, in particular of the lymphatic system, which are induced or worsened by a *Chlamydia trachomatis* infection.

According to another aspect, the subject of the invention is the use of polypeptides according to the invention, of cells transformed with a vector according to the invention and/or of transformed animals according to the invention, for the biosynthesis or the biodegradation of organic or inorganic compounds.

As has been mentioned above, the nucleotide sequences of the invention were identified by homology with sequences known to encode, for example, polypeptides or fragments of enzymatic polypeptides involved in the biosynthesis or the biodegradation of organic or inorganic molecules.

It is thus possible to use the said polypeptides of the invention in a similar manner for the biosynthesis or the biodegradation of organic or inorganic compounds of industrial or therapeutic interest (called compounds of interest).

Among these polypeptides, there may be mentioned in particular the enzymes involved in metabolism, such as the proteolytic enzymes, amino transferases, glucose metabolism, or the enzymes which may be used in the biosynthesis of sugars, amino acids, fatty acids, polypeptides, nucleotides, nucleic acids or any other organic or inorganic compound or in the biodegradation of organic or inorganic compounds.

Among these polypeptides, there may be mentioned, in addition, the mutated or modified enzymes corresponding to mutated or modified polypeptides according to the invention which may also be used for the biosynthesis or the biodegradation of organic or inorganic compounds at the industrial level, such as, for example, the production of compounds of interest, the reprocessing

of manufacturing residues applied to the food industries, to the papermaking industry or to the chemical and pharmaceutical industries.

The methods of biosynthesis or biodegradation of organic or inorganic compounds, characterized in that they use a polypeptide or one of its representative fragments according to the invention, transformed cells according to the invention and/or a transformed animal according to the invention, also form part of the invention.

The invention relates, in addition, to the use of a nucleotide sequence according to the invention, of a polypeptide according to the invention, of an antibody according to the invention, of a cell according to the invention, and/or of a transformed animal according to the invention, for the selection of an organic or inorganic compound capable of modulating, regulating, inducing or inhibiting the expression of genes, and/or of modifying the cellular replication of eukaryotic or prokaryotic cells or capable of inducing, inhibiting or worsening the pathologies linked to an infection by *Chlamydia trachomatis* or one of its associated microorganisms.

The invention also comprises screening assays that comprise method of selecting compounds capable of binding to a polypeptide, fusion polypeptide, or one of its representative fragments according to the invention, capable of binding to a nucleotide sequence according to the invention, or capable of recognizing an antibody according to the invention, and/or capable of modulating, regulating, inducing or inhibiting the expression of genes, and/or of modifying the growth or the cellular replication of eukaryotic or prokaryotic cells, or capable of inducing, inhibiting or worsening, in an animal or human organism, the pathologies linked to an infection by *Chlamydia trachomatis* or one of its associated microorganisms, characterized in that it comprises the following steps:

a) bringing the said compound into contact with the said polypeptide, the said nucleotide sequence, with a transformed cell according to the invention and/or administering the said compound to a transformed animal according to the invention;

b) determining the capacity of the said compound to bind with the said polypeptide or the said nucleotide sequence, or to modulate, regulate, induce or inhibit the expression of genes, or to modulate growth or cellular replication, or to induce, inhibit or worsen in the said transformed animal, the pathologies linked to an infection by *Chlamydia trachomatis* or one of its associated microorganisms.

The transformed cells and/or animals according to the invention may advantageously serve as a model and may be used in methods for studying, identifying and/or selecting compounds capable of being responsible for pathologies induced or worsened by *Chlamydia trachomatis,* or capable of preventing and/or of treating these pathologies such as, for example, genital, eye or systemic diseases, especially of the lymphatic system. In particular, the transformed host cells, in

particular bacteria of the *Chlamydia* family whose transformation with a vector according to the invention may, for example, increase or inhibit its infectivity, or modulate the pathologies usually induced or worsened by the infection, may be used to infect animals in which the onset of pathologies will be monitored. These nontransformed animals, infected for example with transformed *Chlamydia* bacteria, may serve as a study model. In the same manner, the transformed animals according to the invention may, for example, exhibit predispositions to genital and/or eye and/or systemic diseases, especially of the lymphatic system, and thus be used in methods for selecting compounds capable of preventing and/or of treating the said diseases. The said methods using the said transformed cells and/or transformed animals form part of the invention.

The compounds capable of being selected may be organic compounds such as polypeptides or carbohydrates or any other organic or inorganic compounds already known, or new organic compounds produced using molecular modelling techniques and obtained by chemical or biochemical synthesis, these techniques being known to persons skilled in the art.

The said selected compounds may be used to modulate the growth and/or the cellular replication of *Chlamydia trachomatis* or any other associated microorganism and thus to control infection by these microorganisms. The said compounds according to the invention may also be used to modulate the growth and/or the cellular replication of all eukaryotic or prokaryotic cells, in particular tumour cells and infectious microorganisms, for which the said compounds will prove active, the methods which make it possible to determine the said modulations being well known to persons skilled in the art.

Compound capable of modulating the growth of a microorganism is understood to designate any compound which makes it possible to act, to modify, to limit and/or to reduce the development, the growth, the rate of proliferation and/or the viability of the said microorganism.

This modulation may be achieved, for example, by an agent capable of binding to a protein and thus of inhibiting or of potentiating its biological activity, or capable of binding to a membrane protein of the outer surface of a microorganism and of blocking the penetration of the said microorganism into the host cell or of promoting the action of the immune system of the infected organism directed against the said microorganism. This modulation may also be achieved by an agent capable of binding to a nucleotide sequence of a DNA or RNA of a microorganism and of blocking, for example, the expression of a polypeptide whose biological or structural activity is necessary for the growth or for the reproduction of the said microorganism.

Associated microorganism is understood to designate in the present invention any microorganism whose gene expression may be modulated, regulated, induced or inhibited, or whose growth or cellular replication may also be modulated by a compound of the invention. Associated microorganism is also understood to designate in the present invention any microorganism containing

nucleotide sequences or polypeptides according to the invention. These microorganisms may, in some cases, contain polypeptides or nucleotide sequences identical or homologous to those of the invention may also be detected and/or identified by the detection and/or identification methods or kit according to the invention and may also serve as a target for the compounds of the invention.

The invention relates to the compounds capable of being selected by a method of selection according to the invention.

The invention also relates to a pharmaceutical composition comprising a compound chosen from the following compounds:

a nucleotide sequence according to the invention;

a polypeptide or fusion polypeptide according to the invention;

a vector according to the invention;

an antibody according to the invention; and

a compound capable of being selected by a method of selection according to the invention, optionally in combination with a pharmaceutically acceptable vehicle or carrier.

An effective quantity is understood to designate a sufficient quantity of the said compound or antibody, or of a polypeptide of the invention, which makes it possible to modulate the growth of *Chlamydia trachomatis* or of an associated microorganism.

The invention also relates to a pharmaceutical composition according to the invention for the prevention or the treatment of an infection by a bacterium belonging to the species *Chlamydia trachomatis* or by an associated microorganism.

The invention relates, in addition, to an immunogenic and/or vaccine composition, characterized in that it comprises one or more polypeptides according to the invention and/or one or more hybrid polypeptides according to the invention.

The invention also comprises the use of a transformed cell according to the invention, for the preparation of a vaccine composition.

The invention also relates to a vaccine composition, characterized in that it contains a nucleotide sequence according to the invention, a vector according to the invention and/or a transformed cell according to the invention.

The invention also relates to the vaccine compositions according to the invention, for the prevention or the treatment of an infection by a bacterium belonging to the species *Chlamydia trachomatis* or by an associated microorganism.

The invention also relates to the use of DNA encoding polypeptides of *Chlamydia trachomatis*, in particular antigenic determinants, to be formulated as vaccine compositions. In accordance with this aspect of the invention, the DNA of interest is engineered into an expression vector under the control of regulatory elements, which will promote expression of the DNA, *i.e.*,

promoter or enhancer elements. In one preferred embodiment, the promoter element may be cell-specific and permit substantial transcription of the DNA only in predetermined cells. The DNA may be introduced directly into the host either as naked DNA (U.S. Patent No. 5,679,647 incorporated herein by reference in their entirety) or formulated in compositions with other agents which may facilitate uptake of the DNA including viral vectors, *i.e.*, adenovirus vectors, or agents which facilitate immunization, such as bupivicaine and other local anesthetics (U.S. Patent 5,593,972 incorporated herein by reference in their entirety), saponins (U.S. Patent 5,739,118 incorporated herein by reference in their entirety) and cationic polyamines (published international application WO 96/10038 incorporated herein by reference in their entirety).

The DNA sequence encoding the antigenic polypeptide and regulatory element may be inserted into a stable cell line or cloned microorganism, using techniques, such as targeted homologous recombination, which are well known to those of skill in the art, and described *e.g.*, in Chappel, U.S. Patent No. 4,215,051; Skoultchi, WO 91/06667 each of which is incorporated herein by reference in its entirety.

Such cell lines and microorganisms may be formulated for vaccine purposes. In yet another embodiment, the DNA sequence encoding the antigenic polypeptide and regulatory element may be delivered to a mammalian host and introduced into the host genome via homologous recombination (*See*, Chappel, U.S. Patent No. 4,215,051; Skoultchi, WO 91/06667 each of which is incorporated herein by reference in its entirety.

Preferably, the immunogenic and/or vaccine compositions according to the invention intended for the prevention and/or the treatment of an infection by *Chlamydia trachomatis* or by an associated microorganism will be chosen from the immunogenic and/or vaccine compositions comprising a polypeptide or one of its representative fragments corresponding to a protein, or one of its representative fragments, of the cellular envelope of *Chlamydia trachomatis*. The vaccine compositions comprising nucleotide sequences will also preferably comprise nucleotide sequences encoding a polypeptide or one of its fragments corresponding to a protein, or one of its representative fragments, of the cellular envelope of *Chlamydia trachomatis*.

Among these preferred immunogenic and/or vaccine compositions, the most preferred are those comprising a polypeptide or one of its representative fragments, or a nucleotide sequence or one of its representative fragments whose sequences are chosen from the nucleotide or amino acid sequences identified in this functional group and listed above.

The polypeptides of the invention or their representative fragments entering into the immunogenic compositions according to the invention may be selected by techniques known to persons skilled in the art, such as for example on the capacity of the said polypeptides to stimulate T cells, which results, for example, in their proliferation or the secretion of interleukins, and which

leads to the production of antibodies directed against the said polypeptides.

In mice, in which a weight dose of the vaccine composition comparable to the dose used in humans is administered, the antibody reaction is tested by collecting serum followed by a study of the formation of a complex between the antibodies present in the serum and the antigen of the vaccine composition, according to the customary techniques.

According to the invention, the said vaccine compositions will be preferably in combination with a pharmaceutically acceptable vehicle and, where appropriate, with one or more appropriate immunity adjuvants.

Various types of vaccines are currently available for protecting humans against infectious diseases: attenuated live microorganisms (*M. bovis* - BCG for tuberculosis), inactivated microorganisms (influenza virus), acellular extracts (*Bordetella pertussis* for whooping cough), recombinant proteins (hepatitis B virus surface antigen), polysaccharides (pneumococci). Experiments are underway on vaccines prepared from synthetic peptides or from genetically modified microorganisms expressing heterologous antigens. Even more recently, recombinant plasmid DNAs carrying genes encoding protective antigens were proposed as an alternative vaccine strategy. This type of vaccination is carried out with a particular plasmid derived from an *E. coli* plasmid which does not replicate *in vivo* and which encodes only the vaccinal protein. Animals were immunized by simply injecting the naked plasmid DNA into the muscle. This technique leads to the expression of the vaccine protein *in situ* and to a cell-type (CTL) and a humoral type (antibody) immune response. This double induction of the immune response is one of the main advantages of the technique of vaccination with naked DNA.

The vaccine compositions of the present invention can be evaluated in *in vitro* and *in vivo* animal models prior to host, e.g., human, administration. For example, *in vitro* neutralization assays such as those described by Peterson et al. (1988) can be utilized. The assay described by Peterson et al. (1988) is suitable for testing vaccine compositions directed toward either *Chlamydia trachomatis* or *Chlamydia pneumoniae*.

Briefly, hyper-immune antisera is diluted in PBS containing 5% guinea pig serum, as a complement source. *Chlamydiae* (10^4 IFU; inclusion forming units) are added to the antisera dilutions. The antigen-antibody mixtures are incubated at 37°C for 45 minutes and inoculated into duplicate confluent Hep-2 or HeLa cell monolayers contained in glass vials (e.g., 15 by 45 mm), which have been washed twice with PBS prior to inoculation. The monolayer cells are infected by centrifugation at 1000X g for 1 hour followed by stationary incubation at 37° for 1 hour. Infected monolayers are incubated for 48 or 72 hours, fixed and stained with a *Chlamydiae* specific antibody, such as anti-MOMP for *C. trachomatis, etc.* Inclusion-bearing cells are counted in ten fields at a magnification of 200X. Neutralization titer is assigned based on the dilution that gives 50%

inhibition as compared to control monolayers/IFU.

The efficacy of vaccine compositions can be determined *in vivo* by challenging animal models of *Chlamydia trachomatis* infection, *e.g.*, guinea pigs or mice, with the vaccine compositions. For example, *in vivo* vaccine composition challenge studies in the guinea pig model of *Chlamydia trachomatis* infection can be performed. Briefly, female guinea pigs weighing 450 to 500 g are housed in an enviornmentally controlled room with a 12 hour light-dark cycle and immunized with vaccine compositions via a variety of immunization routes. Post-vaccination, guinea pigs are infected in the genital tract with the agent of guinea pig inclusion conjunctivitis (GPIC), which has been grown in HeLa or McCoy cells (Rank et al. (1988)). Each animal receives approximately $1.4x10^7$ inclusion forming units (IFU) contained in 0.05 ml of sucrose-phosphate-glutamate buffer, pH 7.4 (Schacter, J. (1980)). The course of infection monitored by determining the percentage of inclusion-bearing cells by indirect immunofluorescence with GPIC specific antisera, or by Giemsa-stained smear from a scraping from the genital tract (Rank et al. (1988)). Antibody titers in the serum is determined by an enzyme-linked immunosorbent assay.

Alternatively, *in vivo* vaccine composition challenge studies can be performed in the murine model of *Chlamydia trachomatis* (Morrison et al., 1995). Briefly, female mice 7 to 12 weeks of age receive 2.5 mg of depoprovera subcutaneously at 10 and 3 days before vaginal infection. Post-vaccination, mice are infected in the genital tract with 1,500 inclusion-forming units of *Chlamydia trachomatis* contained in 5ml of sucrose-phosphate-glutamate buffer, pH. 7.4. The course of infection is monitored by determining the percentage of inclusion-bearing cells by indirect immunofluorence with *Chlamydia trachomatis* specific antisera, or by a Giemsa-stained smear from a scraping from the genital tract of an infected mouse. The presence of antibody titers in the serum of a mouse is determined by an enzyme-linked immunosorbent assay.

The vaccine compositions comprising nucleotide sequences or vectors into which the said sequences are inserted are in particular described in International Application No. WO 90/11092 and also in International Application No. WO 95/11307.

The nucleotide sequence constituting the vaccine composition according to the invention may be injected into the host after having been coupled to compounds which promote the penetration of this polynucleotide inside the cell or its transport up to the cell nucleus. The resulting conjugates may be encapsulated into polymeric microparticles, as described in International Application No. WO 94/27238 (Medisorb Technologies International).

According to another embodiment of the vaccine composition according to the invention, the nucleotide sequence, preferably a DNA, is complexed with the DEAE-dextran (Pagano et al., 1967) or with nuclear proteins (Kaneda et al., 1989), with lipids (Felgner et al., 1987) or encapsulated into liposomes (Fraley et al., 1980) or alternatively introduced in the form of a gel

facilitating its transfection into the cells (Midoux et al., 1993, Pastore et al., 1994). The polynucleotide or the vector according to the invention may also be in suspension in a buffer solution or may be combined with liposomes.

Advantageously, such a vaccine will be prepared in accordance with the technique described by Tacson et al. or Huygen et al. in 1996 or alternatively in accordance with the technique described by Davis et al. in International Application No. WO 95/11307.

Such a vaccine may also be prepared in the form of a composition containing a vector according to the invention, placed under the control of regulatory elements allowing its expression in humans or animals. It is possible, for example, to use, as vector for the *in vivo* expression of the polypeptide antigen of interest, the plasmid pcDNA3 or the plasmid pcDNA1/neo, both marketed by Invitrogen (R & D Systems, Abingdon, United Kingdom). It is also possible to use the plasmid V1Jns.tPA, described by Shiver et al. in 1995. Such a vaccine will advantageously comprise, in addition to the recombinant vector, a saline solution, for example a sodium chloride solution.

The immunogenic compositions of the invention can be utilized as part of methods of immunization, wherein such methods comprise administering to a host, *e.g.*, a human host, an immunizing amount of the immunogenic compositions of the invention. In a preferred embodiment, the method of immunizing is a method of immunizing against *Chlamydia trachomatis*.

A pharmaceutically acceptable vehicle is understood to designate a compound or a combination of compounds entering into a pharmaceutical or vaccine composition which does not cause side effects and which makes it possible, for example, to facilitate the administration of the active compound, to increase its life and/or its efficacy in the body, to increase its solubility in solution or alternatively to enhance its preservation. These pharmaceutically acceptable vehicles are well known and will be adapted by persons skilled in the art according to the nature and the mode of administration of the active compound chosen.

As regards the vaccine formulations, these may comprise appropriate immunity adjuvants which are known to persons skilled in the art, such as, for example, aluminium hydroxide, a representative of the family of muramyl peptides such as one of the peptide derivatives of N-acetyl-muramyl, a bacterial lysate, or alternatively incomplete Freund's adjuvant, Stimulon™ QS-21 (Aquila Biopharmaceuticals, Inc., Framinham, MA), MPL™ (3-0-deacylated monophosphoryl lipid A; RIBI ImmunoChem Research, Inc., Hamilton, MT), aluminum phosphate, IL-12 (Genetics Institute, Cambridge, MA).

Preferably, these compounds will be administered by the systemic route, in particular by the intravenous route, by the intranasal, intramuscular, intradermal or subcutaneous route, or by the oral route. More preferably, the vaccine composition comprising polypeptides according to the invention will be administered several times, spread out over time, by the intradermal or subcutaneous

route.

Their optimum modes of administration, dosages and galenic forms may be determined according to criteria which are generally taken into account in establishing a treatment adapted to a patient, such as for example the patient's age or body weight, the seriousness of his general condition, tolerance of the treatment and the side effects observed.

The invention comprises the use of a composition according to the invention for the treatment or the prevention of genital diseases which are induced or worsened by *Chlamydia trachomatis*.

Finally, the invention comprises the use of a composition according to the invention for the treatment or the prevention of eye diseases which are induced or worsened by the presence of *Chlamydia trachomatis*.

Finally, the invention comprises the use of a composition according to the invention for the treatment or the prevention of systemic diseases, especially of the lymphatic system, which are induced or worsened by the presence of *Chlamydia trachomatis*.

Other characteristics and advantages of the invention appear in the following examples and figures:

Legend to the figures :

Figure 1 : Line for the production of *Chlamydia trachomatis* sequences

Figure 2 : Analysis of the sequences and assembling

Figure 3 : Finishing techniques

Figure 3a) : Assembly map

Figure 3b) : Determination and use of the orphan ends of the contigs

EXAMPLES

Cells

The *Chlamydia trachomatis* LGV2 strain used is identified to have over 98% homology with the outer membrane protein sequences omp1 (CHTMOMPA) and omp2 (CHTOMP2A) of the *Chlamydia trachomatis* serovar L2/434/Bu strain.

The *Chlamydia trachomatis* LGV2 strain is cultured on mouse fibroblasts (McCoy cells), obtained from the American Type Culture Collection, under the reference ATCC CRL-1696.

Culture of the cells

The mouse fibroblasts are cultured in 75-ml cell culture flasks (Corning). The culture medium is Dulbecco's modified cell culture medium (Gibco BRL No. 04101965) supplemented with

MEM amino acids (Gibco BRL - No. 04301140) L (5 ml per 500 ml of medium) and 5% foetal calf serum (Gibco BRL No. 10270 batch 40G8260K) without antibiotics or antifungals.

The cell culture stock is maintained in the following manner. The cell cultures are examined under an inverted microscope. 24 hours after confluence, each cellular lawn is washed with PBS (Gibco BRL No. 04114190), rinsed and then placed for 5 min in an oven in the presence of 3 ml of trypsine (Gibco BRL No. 25200056). The cellular lawn is then detached and then resuspended in 120 ml of culture medium, the whole is stirred in order to make the cellular suspension homogeneous. 30 ml of this suspension are then distributed per cell culture flask. The flasks are kept in a CO_2 oven (5%) for 48 hours at a temperature of 37°C. The cell stock is maintained so as to have available daily 16 flasks of subconfluent cells. It is these subconfluent cells which will be used so as to be infected with Chlamydia. 25-ml cell culture flasks are also used, these flasks are prepared in a similar manner but the volumes used for maintaining the cells are the following: 1 ml of trypsine, 28 ml of culture medium to resuspend the cells, 7 ml of culture medium are used per 25-ml flask.

Infection of the cells with Chlamydia

Initially, the Chlamydiae are obtained frozen (at -70°C), in suspension in a volume of 1 millilitre. This preparation is slowly thawed, 500 µl are collected and brought into contact with subconfluent cells, which are obtained as indicated above, in a 25-ml cell culture flask, containing 1 ml of medium, so as to cover the cells. The flask is then centrifuged at 2000 rpm in a «swing» rotor for microtitre plates, the centrifuge being maintained at a temperature of 35°C. After centrifugation, the two flasks are placed in an oven at 35°C for three hours. 6 ml of culture medium containing cycloheximide (1 µg/ml) are then added and the flask is stored at 35°C. After 48 hours, the level of infection is evaluated by direct immunofluorescence and by the cytopathogenic effect caused to the cells.

Direct immunofluorescence

Starting with infected cells, which were obtained as indicated above, a cellular smear is deposited with a Pasteur pipette on a microscope slide. The cellular smear is fixed with acetone for 10 minutes; after draining the acetone, the smear is covered with 30 µl of murine monoclonal antibodies directed against MOMP (major outer membrane protein) of Chlamydia (Syva, Biomérieux) labelled with fluorescein isothiocyanate. The whole is then incubated in a humid chamber at a temperature of 37°C. The slides are then rinsed with water, slightly dried, and then after depositing a drop of mounting medium, a coverslip is mounted before reading. The reading is carried out with the aid of a fluorescence microscope equipped with the required filters (excitation at 490 nm, emission at 520 nm).

Harvesting of the *Chlamydia trachomatis*

After checking the infection by direct immunofluorescence, carried out as indicated above, the culture flasks are opened under a sterile cabinet, sterile glass beads with a diameter of the order of a millimeter are placed in the flask. The flask is closed and then vigorously stirred while being maintained horizontally, the cellular lawn at the bottom, so that the glass beads can have a mechanical action on the cellular lawn. Most of the cells are thus detached or broken; the effect of the stirring is observed under an optical microscope so as to ensure proper release of Chlamydiae.

Large-scale infection of the cell cultures

The product of the Chlamydiae harvest (culture medium and cellular debris) is collected with a pipette, and distributed into three cell culture flasks containing subconfluent L cells, obtained as indicated above. The cells thus inoculated are placed under gentle stirring (swing) in an oven at 35°C. After one hour, the flasks are kept horizontally in an oven so that the culture medium covers the cells for 3 hours. 30 ml of culture medium containing actydione (1 µg/ml) are then added to each of the flasks. The culture flasks are then stored at 35°C for 48 hours. The cells thus infected are examined under an optical microscope after 24 hours, the cytopathogenic effect is evaluated by the appearance of cytoplasmic inclusions which are visible under an inverted optical microscope. After 48 hours, the vacuoles containing the Chlamydiae occupy the cytoplasm of the cell and push the cell nucleus sideways. At this stage, numerous cells are spontaneously destroyed and have left free elementary bodies in the culture medium. The Chlamydiae are harvested as described above and are either frozen at -80°C or used for another propagation.

Purification of the Chlamydiae

The product of the Chlamydia harvests, stored at -80°C, is thawed on a water bath at room temperature. After thawing, each tube is vigorously stirred for one minute and immersed for one minute in an ultrasound tank (BRANSON 1200); the tubes are then stirred by inverting before being centrifuged for 5 min at 2000 rpm. The supernatant is carefully removed and kept at cold temperature (ice). The supernatant is vigorously stirred and then filtered on nylon filters having pores of 5 microns in diameter on a support (Nalgene) allowing a delicate vacuum to be established under the nylon filter. For each filtration, three nylon filters are superposed; these filters are replaced after every 40 ml of filtrate. Two hundred milliliters of filtration product are kept at cold temperature, and then after stirring by inverting, are centrifuged at 10,000 rpm for 90 min, the supernatant is removed and the pellet is taken up in 10 ml of 10 mM Tris, vigorously vortexed and then centrifuged at 10,000 rpm for 90 min. The supernatant is removed and the pellet is taken up in a buffer (20 mM Tris pH 8.0, 50 mM

KCl, 5 mM $MgCl_2$) to which 800 units of DNAse I (Boehringer) are added. The whole is kept at 37°C for one hour. One ml of 0.5 M EDTA is then added, and the whole is vortexed and frozen at -20°C.

Preparation of the DNA

The Chlamydiae purified above are thawed and subjected to a proteinase K (Boehringer) digestion in a final volume of 10 ml. The digestion conditions are the following: 0.1 mg/ml proteinase K, 0.1 % SDS at 55°C, stirring every 10 min. The product of digestion is then subjected to a double extraction with phenol-chloroform, two volumes of ethanol are added and the DNA is directly recovered with a Pasteur pipette having one end in the form of a hook. The DNA is dried on the edge of the tube and then resuspended in 500 µl of 2 mM Tris pH 7.5. The DNA is stored at 4°C for at least 24 hours before being used for the cloning.

Cloning of the DNA

After precipitation, the DNA is quantified by measuring the optical density at 260 nm. Thirty µg of Chlamydia DNA are distributed into 10 tubes of 1.5 ml and diluted in 300 µl of water. Each of the tubes is subjected to 10 applications of ultrasound lasting for 0.5 sec in a sonicator (Unisonix XL2020). The contents of the 10 tubes are then grouped and concentrated by successive extractions with butanol (Sigma B1888) in the following manner: two volumes of butanol are added to the dilute DNA mixture. After stirring, the whole is centrifuged for five minutes at 2500 rpm and the butanol is removed. This operation is repeated until the volume of the aqueous phase is less than 1 ml. The DNA is then precipitated in the presence of ethanol and of 0.5 M sodium acetate pH 5.4, and then centrifuged for thirty minutes at 15,000 rpm at cold temperature (4°C). The pellet is washed with 75% ethanol, centrifuged for five minutes at 15,000 rpm and dried at room temperature. A tenth of the preparation is analysed on a 0.8% agarose gel. Typically, the size of the DNA fragments thus prepared is between 200 and 8000 base pairs.

To allow the cloning of the DNA obtained, the ends are repaired. The DNA is distributed in an amount of 10 µg/tube, in the following reaction medium: 100 µl final volume, 1 H buffer (Biolabs 201L), 0.5 µl BSA 0.05 mg/ml, 0.1 mM dATP, 0.1 mM each of dGTP, dCTP or dTTP, 60,000 IU T4 DNA polymerase. The reaction is incubated for thirty minutes at 16°C. The contents of each of the tubes are then grouped before carrying out an extraction with phenol-chloroform and then precipitating the aqueous phase as described above. After this step, the DNA thus prepared is phosphorylated. For that, the DNA is distributed into tubes in an amount of 10 µg per tube, and then in a final volume of 50 µl, the reaction is prepared in the following manner: 1 mM ATP, 1 x kinase buffer, 10 IU T4 polynucleotide kinase (Biolabs 201L). The preparation is incubated for thirty minutes at 37°C. The contents of the tubes are combined and a phenol-chloroform extraction

and then a precipitation are carried out in order to precipitate the DNA. The latter is then suspended in 1 µl of water and then the DNA fragments are separated according to their size on a 0.8% agarose gel (1 x TAE). The DNA is subjected to an electric field of 5 V/cm and then visualized on a UV table. The fragments whose size varies between 1200 and 2000 base pairs are selected by cutting out the gel. The gel fragment thus isolated is placed in a tube and then the DNA is purified with the Qiaex kit (20021 Qiagen), according to the procedure provided by the manufacturer.

Preparation of the vector

14 µg of the cloning vector pGEM-5Zf (Proméga P2241) are diluted in a final volume of 150 µl and are subjected to digestion with the restriction enzyme EcoRV 300 IU (Biolabs 195S) according to the protocol and with the reagents provided by the manufacturer. The whole is placed at 37°C for 150 min and then distributed in the wells of a 0.8% agarose gel subjected to an electric field of 5 V/cm. The linearized vector is visualized on a UV table, isolated by cutting out the gel and then purified by the Qiaex kit (Qiagen 20021) according to the manufacturer's recommendations. The purification products are grouped in a tube, the volume is measured and then half the volume of phenol is added and the whole is vigorously stirred for 1 min. Half the volume of chloroform-isoamyl alcohol 24:1 is added and vigorously stirred for 1 min. The whole is centrifuged at 15,000 rpm for 5 min at 4°C, the aqueous phase is recovered and transferred into a tube. The DNA is precipitated in the presence of 0.3 M sodium acetate, pH 5.4 and 3 volumes of ethanol and placed at -20°C for 1 hour. The DNA is then centrifuged at 15,000 rpm for 30 min at 4°C, the supernatant is removed while preserving the pellet, washed twice with 70% ethanol. After drying at room temperature, the DNA is suspended in 25 µl of water.

Phosphorylation of the vector

25 µl of the vector prepared in the preceding step are diluted in a final volume of 500 µl of the following reaction mixture:

After repair, the DNA is subjected to a phenol-chloroform extraction and a precipitation, the pellet is then taken up in 10 µl of water, the DNA is quantified by measuring the optical density at 260 nm. The quantified DNA is ligated into the vector PGEm-5Zf(+) prepared by the restriction enzyme EcoRV and dephosphorylated (see preparation of the vector). The ligation is carried out under three conditions which vary in the ratio between the number of vector molecules and the number of insert molecules. Typically, an equimolar ratio, a ratio of 1:3 and a ratio of 3:1 are used for the ligations which are, moreover, carried out under the following conditions: vector PGEm-5Zf(+) 25 ng, cut DNA, ligation buffer in a final volume of 20 µl with T4 DNA ligase (Amersham E70042X); the whole is then placed in a refrigerator overnight and then a phenol-

chloroform extraction and a precipitation are carried out in a conventional manner. The pellet is taken up in 5 µl of water.

Transformation of the bacteria

Plating of the bacteria

Petri dishes containing LB Agar medium containing ampicillin (50 µg/ml), Xgal (280 µg/ml) [5-bromo-4-chloro-indolyl-beta-D-galactopyranoside (Sigma B-4252)], IPTG (140 µg/ml) [isopropyl-beta-D-thiogalactoside (Sigma I-6758)] are used, 50 and 100 µl of bacteria are plated for each of the ligations. The Petri dishes are placed upside down at 37°C for 15 to 16 hours in an oven. The number of «recombinant» positive clones is evaluated by counting the white colonies and the blue colonies which are thought to contain the vector alone.

Evaluation of the «recombinant» positive clones:

Ninety-four white colonies and two blue colonies are collected with the aid of sterile cones and are deposited at the bottom of the wells of plates designed for carrying out the amplification techniques. 30 µl of the following reaction mixture are added to each well: 1.7 mM $MgCl_2$, 0.2 mM each of dATP, dCTP, dGTP and dTTP, two synthetic oligonucleotides corresponding to sequences flanking the cloning site on either side and orienting the synthesis of the DNA in a convergent manner (0.5 µM RP and PU primers, 1 U TAQ polymerase (GibcoBRL 18038-026)).

The colonies thus prepared are subjected to a temperature of 94°C for 5 min and then to 30 thermal cycles composed of the following steps: 94°C for 40 s, 50°C for 30 s, 72°C for 180 s. The reaction is then kept for 7 min at 72°C and then kept at 4°C.

The amplification products are deposited on an agarose gel (0.8%), stained with ethidium bromide, subjected to electrophoresis, and then analysed on an ultraviolet table. The presence of an amplification fragment having a size greater than 500 base pairs indicates the presence of an insert. The bacterial clones are then prepared so as to study the sequence of their insert.

Sequencing

To sequence the inserts of the clones obtained as above, these were amplified by PCR on bacteria cultures carried out overnight using the primers for the vectors flanking the inserts. The sequence of the ends of these inserts (on average 500 bases on each side) was determined by automated fluorescent sequencing on an ABI 377 sequencer, equipped with the ABI Prism DNA Sequencing Analysis software (version 2.1.2).

Analysis of the sequences

The sequences obtained by sequencing in a high-yield line (Figure 1) are stored in a database; this part of the production is independent of any treatment of the sequences. The sequences are extracted from the database, avoiding all the regions of inadequate quality, that is to say the regions for which uncertainties are observed on the sequence at more than 95%. After extraction, the sequences are introduced into a processing line, the diagram of which is described in Figure 2. In a first path of this processing line, the sequences are assembled by the Gap4 software from R. Staden (Bonfield et al., 1995) (OS UNIX/SUN Solaris); the results obtained by this software are kept in the form of two files which will be used for a subsequent processing. The first of these files provides information on the sequence of each of the contigs obtained. The second file represents all the clones participating in the composition of all the contigs as well as their positions on the respective contigs.

The second processing path uses a sequence assembler (TIGR-Asmg assembler UNIX/SUN Solaris); the results of this second processing path are kept in the form of a file in the TIGR-Asmg format which provides information on the relationship existing between the sequences selected for the assembly. This assembler is sometimes incapable of linking contigs whose ends overlap over several hundreds of base pairs.

The results obtained from these two assemblers are compared with the aid of the BLAST program, each of the contigs derived from one assembly path being compared with the contigs derived from the other path.

For the two processing paths, the strict assembly parameters are fixed (95% homology, 30 superposition nucleotides). These parameters avoid 3 to 5% of the clones derived from eukaryotic cells being confused with sequences obtained from the clones derived from *Chlamydia trachomatis*. The eukaryotic sequences are however preserved during the course of this project; the strategy introduced, which is described below, will be designed, inter alia, not to be impeded by these sequences derived from contaminating clones.

The results of these two assemblers are processed in a software developed for this project. This software operates on a Windows NT platform and receives, as data, the results derived from the STADEN software and/or the results derived from the TIGR-Asmg assembler, the software, results, after processing of the data, in the determination of an assembly map which gives the proximity relationship and the orientation of the contigs in relation to one another (Figure 3a). Using this assembly map, the software determines all the primers necessary for finishing the project. This treatment, which will be detailed below, has the advantage of distinguishing the isolated sequences derived from the contaminations, by the DNA eukaryotic cells, of the small-sized sequences clearly integrated into the project by the relationships which they establish with contigs. In order to allow, without any risk of error, the arrangement and the orientation of the contigs in relation to one another, a statistical evaluation of the accuracy of the names «naming» of sequence is made from the results of

«contigation». This evaluation makes it possible to give each of the clone plates, as well as each of the subsets of plates, a weight which is inversely proportional to probable error rate existing in the «naming» of the sequences obtained from this plate or from a subset of this plate. In spite of a low error rate, errors may occur throughout the steps of production of the clones and of the sequences. These steps are numerous, repetitive and although most of them are automated, others, like the deposition in the sequencers, are manual; it is then possible for the operator to make mistakes such as the inversion of two sequences. This type of error has a repercussion on the subsequent processing of the data, by resulting in relationships (between the contigs) which do not exist in reality, then in attempts at directed sequencing between the contigs which will end in failure. It is because of this that the evaluation of the naming errors is of particular importance since it allows the establishment of a probabilistic assembly map from which it becomes possible to determine all the clones which will serve as template to obtain sequences separating two adjacent contigs. Table 2 of parent U.S. Application Serial No. 60/107077 filed November 4, 1998, French application 97-15041 filed November 28, 1997 and French application 97-16034 filed December 17, 1997, each of which is incorporated by reference herein in its entirety, gives the clones and the sequences of the primers initially used during the initial operations.

To avoid the step which consists in ordering and then preparing the clones by conventional microbiological means, outer and inner primers oriented towards the regions not yet sequenced are defined by the software. The primers thus determined make it possible to prepare, by PCR, a template covering the nonsequenced region. It is the so-called outer primers (the ones most distant from the region to be sequenced) which are used to prepare this template. The template is then purified and a sequence is obtained on each of the two strands during 2 sequencing reactions which each use one of the 2 inner primers. In order to facilitate the use of this approach, the two outer primers and the two inner primers are prepared and then stored on the same position of 4 different 96-well plates. The two plates containing the outer primers are used to perform the PCRs which serve to prepare the templates. These templates will be purified on purification columns preserving the topography of the plates. Each of the sequences are obtained using primers situated on one and then on the other of the plates containing the inner primers. This distribution allows a very extensive automation of the process and results in a method which is simple to use for finishing the regions not yet sequenced. Table 3 of parent U.S. Application Serial No. 60/107077 filed November 4, 1998, French application 97-15041 filed November 28, 1997 and French application 97-16034 filed December 17, 1997, each of which is incorporated by reference herein in its entirety, gives the names and the sequences of the primers used for finishing *Chlamydia trachomatis*.

Finally, a number of contigs exist in a configuration where one of their ends is not linked to any other contig end (Figure 3b) by a connecting clone relationship (a connecting clone is

defined as a clone having one sequence end on a contig and the other end of its sequence on another contig; furthermore, this clone must be derived from a plate or a subset of plates with adequate naming quality). For the *Chlamydia trachomatis* project, this particular case occurred 37 times. Two adjacent PCR primers orienting the synthesis of the DNA towards the end of the consensus sequence are defined for each of the orphan ends of the consensus sequence. The primer which is closest to the end of the sequence is called the inner primer whereas the primer which is more distant from the end of the sequence is called the outer primer. The outer primers are used to explore the mutual relationship between the orphan ends of the different contigs. The presence of a single PCR product and the possibility of amplifying this product unambiguously using the inner primers evokes the probable relationship between the contigs on which the primers which allowed the amplification are situated. This relationship will be confirmed by sequencing and will allow the connection between the orphan ends of the consensus sequences. This strategy has made it possible to obtain a complete map of the *Chlamydia trachomatis* chromosome and then to finish the project.

Quality control

All the bases not determined with certainty in the chromosomal sequence were noted and the density of uncertainties was measured on the entire chromosome. The regions with a high density of uncertainties were noted and the PCR primers spanning these regions were drawn and are represented in Table 4 of parent U.S. Application Serial No. 60/107077 filed November 4, 1998, French application 97-15041 filed November 28, 1997 and French application 97-16034 filed December 17, 1997 each of which is incorporated by reference herein in its entirety.

Data banks

Local reorganizations of major public banks were used. The protein bank used consists of the nonredundant fusion of the Genpept bank (automated translation of GenBank, NCBI; Benson et al., 1996).

The entire BLAST software (public domain, Altschul et al., 1990) for searching for homologies between a sequence and protein or nucleic data banks was used. The significance levels used depend on the length and the complexity of the region tested as well as the size of the reference bank. They were adjusted and adapted to each analysis.

The results of the search for homologies between a sequence according to the invention and protein or nucleic data banks are presented and summarized in Table 1 below.

Table 1: List of coding chromosome regions and homologies between these regions and the sequence banks.

Legend to Table 1: Open reading frames are identified with the GenMark software version 2.3A (GenePro), the template used is *Chlamydia trachomatis* of order 4 on a length of 196 nucleotides with a window of 12 nucleotides and a minimum signal of 0.5. These reading frames are numbered in order of appearance on the chromosome, starting with ORF2 (ORF column). The positions of the beginning and of the end are then given in column 2 (position). When the position of the beginning is greater than the position of the end, this means that the region is encoded by the strand complementary to the sequence which was given in the sequence SEQ ID No. 1.

All the putative products were subjected to a search for homology on GENPEPT (release 103 for SEQ ID No. 2 to SEQ ID No. 1076 and release 108 for SEQ ID No. 1077 to SEQ ID No. 1197 with the BLASTp software (Altschul et al. 1990), with, as parameters, the default parameters with the exception of the expected value E set at 10^{-5} (for SEQ ID No. 2 to SEQ ID No. 1076) and P value set at e^{-10} (for SEQ ID No. 1077 to SEQ ID No. 1197). Subsequently, only the identities greater than 30% (I% column) were taken into account. The description of the most homologous sequence is given in the Homology column; the identifier for the latter sequence is given in the ID column and the animal species to which this sequence belongs is given in the Species column. The Homology score is evaluated by the sum of the blast scores for each region of homology and reported in the Score column. Table 1 also reflects data from additional ORF finder programs as defined below.

Materials and methods: transmembrane domains:

The DAS software was used as recommended by the authors (Cserzo et al., 1997).

This method uses, to predict the transmembrane domains, templates derived from a sampling of selected proteins. All the regions for which a «Cutoff» greater than 1.5 was found by the program were taken into account.

Additional ORF Finder Programs

For this analysis, two additional ORF finder programs were used to predict potential open reading frames of a minimum length of 74 amino acids; Glimmer (Salzberg, S.L., Delcher, A., Kasif, S., and W. White. 1998. Microbial gene identification using interpolated Markov models. Nucleic Acids Res. 26:544-548.), and an in-house written program. The in-house program used a very simple search algorithm. The analysis required the that the genomic DNA sequence text be in the 5' to 3' direction, the genome is circular, and that TAA, TAG, and TGA are stop codons. The search parameters were as follows:

(1) A search for an ORF that started with a GTG codon was performed. If no GTG codons were found, then a search for an ATG codon was performed. However, if a GTG codon was found,

then a search downstream for a ATG codon was performed. All start and stop nucleotide positions were recorded.

(2) A search for an ORF that started with a TTG codon was performed. If no TTG codons were found, then a search for a ATG codon was performed. However, if a TTG codon was found, then a search downstream for a ATG codon was performed. All start and stop nucleotide positions were recorded.

(3) The analysis described in steps 1 and 2 were repeated for the opposite strand of DNA sequence.

(4) A search for ORFs that determined all ORF lengths using start and stop positions in the same reading frames was performed.

(5) All ORFs whose DNA length was less than 225 nucleotides were eliminated from the search.

Sequence Search

Surface Exposed Protein Search Criteria

Potential cell surface vaccine targets are outer membrane proteins such as porins, lipoproteins, adhesions and other non-integral proteins. In *Chlamydia psittaci*, the major immunogens is a group of putative outer membrane proteins (POMPs) and no homologs have been found in *Chlamydia trachomatis* and *Chlamydia trachomatis* by traditional analysis (Longbottom, D., Russell, M., Dunbar, S.M., Jones, G.E., and A.J. Herring. 1998. Molecular Cloning and Characterization of the Genes Coding for the Highly Immunogenic Cluster of 90-Kilodalton Envelope Proteins from *Chlamydia psittaci* Subtype That Causes Abortion in Sheep. Infect Immun 66:1317-1324.) However, utilizing the criteria described below, several ORFs encoding outer membrane proteins have been identified in *Chlamydia trachomatis*, all of which may represent vaccine candidates. Any ORF which met any one of the criteria described below were considered to encode a surface exposed protein.

Protein homology searches of the translated ORFs were done using the Blastp 2.0 tool (Altschul, S.F., Madden, T.L., Schaffer, A.A., Zhang, J., Zhang, Z., Miller, W., and D.J. Lipman. 1997. Gapped BLAST and PSI-BLAST: a new generation of protein database search programs. Nucleic Acids Res. 25:3389-3402). An ORF was labeled surface exposed if the translated ORF had homology to a known, or hypothetical, or putative surface exposed protein with a P score less than e^{-10}.

Most, if not all, proteins that are localized to the membrane of bacteria, via a secretory pathway, contain a signal peptide. The software program SignalP, was used to analyze the amino acid sequence of an ORF for such a signal peptide (Nielsen, H., Engelbrecht. J., Brunak, S., and G. von Heijne. 1997. Identification of prokaryotic and eukaryotic signal peptides and prediction

of their cleavage sites. Protein Engineering 10:1-6.) The first 60 N-terminal amino acids of each ORF were analyzed by SignalP using the Gram-negative software database. The output generates four separate values, maximum C, maximum Y, maximum S, and mean S. The S-score, or signal region, is the probability of the position belonging to the signal peptide. The C-score, or cleavage site, is the probability of the position being the first in the mature protein. The Y-score is the geometric average of the C-score and a smoothed derivative of the S-score. A conclusion of either a Yes or No is given next to each score. If all four conclusions are Yes and the C-terminal amino acid is either a phenylalanine (F) or a tyrosine (Y), the ORF was labelled outer membrane (Struyve, M., Moons, M., and J. Tommassen. 1991. Carboxy-terminal Phenylalanine is Essential for the Correct Assembly of a Bacterial Outer Membrane Protein. J. Mol. Biol. 218:141-148.)

The program called Psort was used to determine the localization of a protein based on its signal sequence, recognition of transmembrane segments, and analysis of its amino acid composition (Nakai, K., and M. Kanehisa. 1991. Expert system for predicting protein localization sites in gram-negative bacteria. Proteins 11:95-110.) An ORF is considered to be an outer membrane protein if the output data predicts the ORF encoded protein as outer membrane with a certainty value of 0.5 or better and whose value is at least twice as large as the next predicted localized certainty value.

Finally, ORFs that were not predicted to be outer membrane or surface exposed, based on the above criteria, were further analyzed. The Blastp output data for these ORFs were searched using various general and specific keywords, suggestive of known cell surface exposed proteins. An ORF was labeled surface exposed if the keywords matched had a Blastp hit with a P score less than e^{-10}, and there was no better data indicating otherwise. The following is a list of the searched keywords:

Adhesion	Adhesin	Invasin
Invasion	Extension	Omp
Outer Surface	Porin	Outer Membrane
Cell Surface	Cell Wall	Pilin
Flagellar sheath	Cir	ChuA
CopB	ExeD	FadL
FecA	FepA	FhuA
FmdC	FomA	FrpB
GspD	HemR	HgbA
Hgp	HmbR	HmuR
HMW	HrcC	Hrp

InvG	LamB	LbpA
LcrQ	Lmp1	MxiD
MOMP	PilE	HpaA
NolW	NspA	OpcP
OpnP	Opr	OspA
PhoE	PldA	Por
PscC	PulD	PupA
QuiX	RafY	ScrY
SepC	ShuA	SomA
SpiA	Tbp1	Yop
YscC	mip	Tol
Pilus	BtuB	

Those ORFs that did not meet the minimum requirement for being an outer membrane protein based on the above search criteria but which were homologous to identified outer membrane ORFs in *Chlamydia pneumoniae* were included. The *Chlamydia pneumoniae* genome (French patent application No. 97-14673, filed 21 November 1997) was analyzed using the above search criteria and a number of outer membrane ORFs were identified. These *Chlamydia pneumoniae* ORFs were then tested against the *Chlamydia trachomatis* genome using Blastp. Any *Chlamydia trachomatis* ORF with a Blastp P value less than e^{-10} against a *Chlamydia pneumoniae* outer membrane was included in this section, if there was no better data indicating otherwise. A list of ORFs in the *Chlamydia trachomatis* genome encoding putative surface exposed proteins is set forth above in the specification.

Identification of Putative Lipoproteins in the Genome of *Chlamydia trachomatis*

Lipoproteins are the most abundant post-translationally modified bacterial secretory proteins (Pugsley, A. P.. 1993. The complete general secretory pathway in Gram-negative bacteria. Microbiol. Rev. 57:50-108). The characteristic features of lipoproteins are a thiol-linked diacylglyceride and an amine-linked monoacyl group on the cysteine that becomes the amino-terminal residue after signal peptide cleavage by Signal Peptidase II. (Pugsley, A. P.. 1993. The complete general secretory pathway in Gram-negative bacteria. Microbiol. Rev. 57:50-108). The identification of putative lipoproteins from the genomic sequencing of *Chlamydia trachomatis* was done by examining the deduced amino acid sequence of identified ORFs for the presence of a signal peptide with a Signal Peptidase II cleavage site analogous to the consensus sequence for prolipoprotein modification and processing reactions (Hayashi, S., and H. C. Wu. 1992. Identification and characterization of lipid-modified proteins in bacteria, p. 261-285. *In* N. M. Hooper and A. J. Turner (ed.) Lipid modification of proteins: A practical approach. Oxford University Press, New York;

Sutcliffe, I. C. and R. R. B. Russell. 1995. Lipoproteins of Gram-positive bacteria. J. Bacteriol. 177:1123-1128).

The deduced amino acid sequences of *Chlamydia trachomatis* ORFs were initially screened for the most basic of lipoprotein characteristics, a cysteine in the first 30 amino acids of the deduced protein. ORFs with a standard start codon (ATG, GTG, or TTG) and having one or more of the following characteristics were selected for direct analysis of their first 30 amino acids:

(a) Significant Signal P value (at least two out-of-the four values are Yes)

(b) PSORT value indicating membrane passage (IM-inner membrane, Peri-periplasm, or OM-outer membrane)

(c) Identification of the word lipoprotein among the ORF Blastp data set.

(d) A Blastp value of $<e^{-10}$ with a putative lipoprotein from *Chlamydia pneumoniae* (French application No. 97-14673 filed 21 November 1997).

The first 30 amino acids encoded by each ORF in this set were analyzed for the characteristics commonly found in lipoprotein signal peptides (Pugsley, A. P.. 1993. The complete general secretory pathway in Gram-negative bacteria. Microbiol. Rev. 57:50-108; Hayashi, S., and H. C. Wu. 1992. Identification and characterization of lipid-modified proteins in bacteria, p. 261-285. *In* N. M. Hooper and A. J. Turner (ed.) Lipid modification of proteins: A practical approach. Oxford University Press, New York; Sutcliffe, I. C. and R. R. B. Russell. 1995. Lipoproteins of Gram-positive bacteria. J. Bacteriol. 177:1123-1128.) Putative lipoprotein signal peptides were required to have a cysteine between amino acid 10 and 30 and reach a minimum score of three based on the following criteria for lipoprotein signal peptides:

(a) Identification of specific amino acids in specific positions around the cysteine which are part of the consensus Signal Peptidase II cleavage site (Hayashi, S., and H. C. Wu. 1992. Identification and characterization of lipid-modified proteins in bacteria, p. 261-285. *In* N. M. Hooper and A. J. Turner (ed.) Lipid modification of proteins: A practical approach. Oxford University Press, New York); Sutcliffe, I. C. and R. R. B. Russell. 1995. Lipoproteins of Gram-positive bacteria. J. Bacteriol. 177:1123-1128). Since the identification of the cleavage site is the most important factor in identifying putative lipoproteins, each correctly positioned amino acid contributed toward reaching the minimum score of three.

(b) A hydrophobic region rich in alanine and leucine prior to the cleavage site (Pugsley, A. P.. 1993. The complete general secretory pathway in Gram-negative bacteria. Microbiol. Rev. 57:50-108) contributed toward reaching the minimum score of three.

(c) A short stretch of hydrophilic amino acids greater than or equal to 1, usually lysine or arginine, following the N-terminal methionine (Pugsley, A. P.. 1993. The complete general secretory

pathway in Gram-negative bacteria. Microbiol. Rev. 57:50-108) contributed toward reaching the minimum score of three.

A list of ORFs in the *Chlamydia trachomatis* genome encoding putative lipoproteins is set forth above in the specification.

LPS-Related ORFs of *Chlamydia trachomatis*

Lipopolysaccharide (LPS) is an important major surface antigen of Chlamydia cells. Monoclonal antibodies (Mab) directed against LPS of *Chlamydia pneumoniae* have been identified that can neutralize the infectivity of *Chlamydia pneumoniae* both *in vitro* and *in vivo* (Peterson et al. 1988). Similar results are expected utilizing monoclonal antibodies against LPS of *Chlamydia trachomatis*. LPS is composed of lipid A and a core oligosaccharide portion and is phenotypically of the rough type (R-LPS) (Lukacova, M., Baumann, M., Brade, L., Mamat, U., Brade, H. 1994. Lipopolysaccharide Smooth-Rough Phase Variation in Bacteria of the Genus *Chlamydia*. Infect. Immun. June 62(6):2270-2276.) The lipid A component is composed of fatty acids which serve to anchor LPS in the outer membrane. The core component contains sugars and sugar derivatives such as a trisaccharide of 3-deoxy-D-manno-octulosonic acid (KDO) (Reeves, P.R., Hobbs, M., Valvano, M.A., Skurnik, M., Whitfield, C., Coplin, D., Kido, N., Klena, J., Maskell, D., Raetz, C.R.H., Rick, P.D. 1996. *Bacterial Polysaccharide Synthesis and Gene Nomenclature* pp. 10071-10078, Elsevier Science Ltd.). The KDO gene product is a multifunctional glycosyltransferase and represents a shared epitope among the Chlamydia. For a review of LPS biosynthesis see, e.g., Schnaitman, C.A., Klena, J.D. 1993. Genetics of Lipopolysaccharide Biosynthesis in Enteric Bacteria. Microbiol. Rev. 57:655-682.

A text search of the ORF Blastp results identified several genes that are involved in Chlamydial LPS production with a P score less than e^{-10}. The following key-terms were used in the text search: KDO, CPS (Capsular Polysaccharide Biosynthesis), capsule, LPS, rfa, rfb, rfc, rfe, rha, rhl, core, epimerase, isomerase, transferase, pyrophosphorylase, phosphatase, aldolase, heptose, manno, glucose, lpxB, fibronectin, fibrinogen, fucosyltransferase , lic, lgt, pgm, tolC, rol, ChoP, phosphorylcholine, waaF, PGL-Tb1. A list of ORFs in the *Chlamydia trachomatis* genome encoding putative polypeptides involved in LPS biosynthesis is set forth above in the specification.

Type III And Other Secreted Products

Type III secretion enables gram-negative bacteria to secrete and inject pathogenicity proteins into the cytosol of eukaryotic host cells (Hueck, C. J., 1998. Type III Protein Secretion Systems in Bacterial Pathogens of Animals and Plants. In Microbiology and Molecular Biology Reviews. 62:379-433.) These secreted factors often resemble eukaryotic signal transduction factors,

thus enabling the bacterium to redirect host cell functions (Lee, C.A., 1997. Type III secretion systems: machines to deliver bacterial proteins into eukaryotic cells? Trends Microbiol. 5:148-156.) In an attempt to corrupt normal cellular functions, Chlamydial pathogenicity factors injected into the host cytosol will nonetheless, as cytoplasmic constituents be processed and presented in the context of the Major Histocompatibility Complex (MHC class I). As such, these pathogenicity proteins represent MHC class I antigens and will play an important role in cellular immunity. Also included in this set are secreted non-type III products that may play a role as vaccine components.

A text search of the ORF Blastp results identified genes that are involved in *Chlamydia trachomatis* protein secretion with a P score less than e^{-10}. The following key-terms were used in the text search in an effort to identify surface localized or secreted products: Yop, Lcr, Ypk, Exo, Pcr, Pop, Ipa, Vir, Ssp, Spt, Esp, Tir, Hrp, Mxi, hemolysin, toxin, IgA protease, cytolysin, tox, hap, secreted and Mip.

Chlamydia trachomatis ORFs that did not meet the above keyword search criteria, but have homologs *in Chlamydia pneumoniae* that do meet the search criteria are included herein. The *Chlamydia pneumoniae* genome (French patent application No. 97-14673, filed 21 November 1997) was analyzed using the above search criteria and a number of ORFs were identified. These *Chlamydia* pneumoniae ORFs were tested against the *Chlamydia trachomatis* genome using Blastp. Any *Chlamydia trachomatis* ORF with a Blastp P value < e^{-10} against a *Chlamydia pneumoniae* homolog, identified using the above search criteria, was included. A list of ORFs in the *Chlamydia trachomatis* genome encoding putative secreted proteins is set forth above in the specification.

6004.4.62.PROV

Chlamydia trachomatis RGD Recognition Sequence

Proteins that contain Arg-Gly-Asp (RGD) attachment site, together with integrins that serve as their receptor constitute a major recognition system for cell adhesion. The RGD sequence is the cell attachment site of a large number of adhesive extracellular matrix, blood, and cell surface proteins and nearly half of the known integrins recognize this sequence in their adhesion protein ligands. There are many RGD containing microbial proteins such as the penton protein of adenovirus, the coxsackie virus, the foot and mouth virus and pertactin, a 69 kDa (kilodalton) surface protein of *Bordetella pertussis,* that serve as ligands through which these microbes bind to integrins on the cell surfaces and gain entry into the cell. The following provides evidence supporting the importance of RGD in microbial adhesion:

a) The adenovirus penton base protein has a cell rounding activity and when penton base was expressed in *E. coli*, it caused cell rounding and cells adhered to polystyrene wells coated with the protein. Mutant analysis showed that both these properties required an RGD sequence. Virus mutants with amino acid substitutions in the RGD sequence, showed much less adherence to HeLa S3

cells, and also were delayed in virus reproduction (Bai, M., Harfe, B., and Freimuth, P. 1993. Mutations That Alter an RGD Sequence in the Adenovirus Type 2 Penton Base Protein Abolish Its Cell-Rounding Activity and Delay Virus Reproduction in Flat Cells. J. Virol. 67:5198-5205).

b) It has been shown that attachment and entry of coxsackie virus A9 to GMK cells were dependent on an RGD motif in the capsid protein VP1. VP1 has also been shown to bind $\alpha_v\beta_3$ integrin, which is a vitronectin receptor (Roivainen, M., Piirainen, L., Hovi, T., Virtanen, I., Riikonen, T., Heino, J., and Hyypia, T. 1994. Entry of Coxsackievirus A9 into Host Cells: Specific Interactions with $\alpha_v\beta_3$ Integrin, the Vitronectin Receptor Virology, 203:357-65).

c) During the course of whooping cough, *Bordetella pertussis* interacts with alveolar macrophages and other leukocytes on the respiratory epithelium. Whole bacteria adheres by means of two proteins, filamentous hemagglutinin (FHA) and pertussis toxin. FHA interacts with two classes of molecules on macrophages, galactose containing glycoconjugates and the integrin CR3. The interaction between CR3 and FHA involves recognition of RGD sequence at the positions 1097-1099 in FHA (Relman, D., Tuomanen, E., Falkow, S., Golenbock, D. T., Saukkonen, K., and Wright, S. D. " Recognitition of a Bacterial Adhesin by an Integrin: Macrophage CR3 Binds Filamentous Hemagglutinin of Bordetella Pertussis." Cell, 61:1375-1382 (1990)).

d) Pertactin, a 69 kDa outer membrane protein of *Bordetella pertussis,* has been shown to promote attachment of Chinese hamster ovary cells (CHO). This attachment is mediated by recognition of RGD sequence in pertactin by integrins on CHO cells and can be inhibited by synthetic RGD containing peptide homologous to the one present in pertactin (Leininger, E., Roberts, M., Kenimer, J. G., Charles, I. G., Fairweather, N., Novotny, P., and Brennan, M. J. 1991. Pertactin, an Arg-Gly-Asp containing *Bordetella pertussis* surface protein that promotes adherence of mammalian cells Proc. Natl. Acad. Sci. USA, 88:345-349).

e) The RGD sequence is highly conserved in the VP1 protein of foot and mouth disease virus (FMDV). Attachment of FMDV to baby hamster kidney cells (BHK) has been shown to be mediated by VP1 protein via the RGD sequence. Antibodies against the RGD sequence of VP1 blocked attachment of virus to BHK cells (Fox, G., Parry, N. R., Barnett, P. V., McGinn, B., Rowland, D. J., and Brown, F. 1989. The Cell Attachment Site on Foot-and-Mouth Disease Virus Includes the Amino Acid Sequence RGD (Arginine-Glycine-Aspartic Acid) J. Gen. Virol., 70:625-637).

It has been demonstrated that bacterial adherence can be based on interaction of a bacterial adhesin RGD sequence with an integrin and that bacterial adhesins can have multiple

binding site characteristic of eukaryotic extracellular matrix proteins. RGD recognition is one of the important mechanisms used by microbes to gain entry into eukaryotic cells.

The complete deduced protein sequence of the *Chlamydia trachomatis* genome was searched for the presence of RGD sequence. There were a total of 38 ORFs that had one or more RGD sequences. Not all RGD containing proteins mediate cell attachment. It has been shown that RGD containing peptides that have proline immediately following the RGD sequence are inactive in cell attachment assays (Pierschbacher & Ruoslahti. 1987. Influence of stereochemistry of the sequence Arg-Gly-Asp-Xaa on binding specificity in cell adhesion. J. Biol. Chem. *262*:17294-98). ORFs that had RGD, with proline as the amino acid following the RGD sequence were excluded from the list. Also, RGD sequence may not be available at the surface of the protein or may be present in a context that is not compatible with integrin binding. Since not all RGD-containing proteins are involved in cell attachment, several other criteria were used to refine the list of RGD-containing proteins. A list of ORFs in the *Chlamydia trachomatis* genome encoding polypeptides with RGD recognition sequence(s) is set forth above in the specification.

Non-*Chlamydia pneumoniae* ORFs

Chlamydia trachomatis ORFs were compared to the ORFs in the *Chlamydia pneumoniae* genome (French patent application No. 97-14673, filed 21 November 1997) using Blastp. Any *Chlamydia trachomatis* ORF with a Blastp «P» value greater than e^{-10} (i.e. $>e^{-10}$) against *Chlamydia pneumoniae* ORFs are included in this section. A list of ORFs in the *Chlamydia trachomatis* genome which are not found in *Chlamydia pneumoniae* is set forth above in the specification.

Cell Wall Anchor Surface ORFs

Many surface proteins are anchored to the cell wall of Gram-positive bacteria via the conserved LPXTG motif (Schneewind, O., Fowler, A., and Faull, K.F. 1995. Structure of the Cell Wall Anchor of Surface Proteins in *Staphylococcus aureus*. Science 268:103-106). A search of the proteins encoded by the *Chlamydia trachomatis* ORFs was done using the motif LPXTG. A list of ORFs in the *Chlamydia trachomatis* genome encoding polypeptides anchored to the cell wall is set forth above in the specification.

ECACC Deposits

Samples of *Chlamydia trachomatis* were deposited with the European Collection of Cell Cultures (ECACC), Salisbury, Wiltshire SP4 OJG, UK on November 26, 1998 and assigned the provisional accession number 98112618. Cells can be grown, harvested and purified, and DNA can

be prepared as discussed above. In order to enable recovery of specific fragments of the chromosome, one can run targeted PCR reactions, whose amplification products can then be sequenced and/or cloned into any suitable vector, according to standard procedures known to those skilled in the art.

In addition, a pool of clones covering the *Chlamydia trachomatis* genome was deposited with the ECACC on November 26, 1998 and assigned provisional accession number 98112617. The pool of clones contains a series of clones, which when taken together, cover the whole chromosome, with a redundancy of slightly more than ten. The total number of clones in the sample is 13,572.

Table 4 lists groups of oligonucleotides to be used to amplify each of ORFs 2-1197 according to standard procedures known to those skilled in the art. Such oligonucleotides are listed as SEQ ID Nos. 1198 to 5981. For each ORF, the following is listed: one forward primer positioned 2,000 bp upstream of the beginning of the ORF; one forward primer positioned 200 bp upstream of the beginning of the ORF; one reverse primer positioned 2,000 bp downstream at the end of ORF, which is 2,000 bp upstream of the end site of the ORF on the complementary strand; and one reverse primer 200 bp downstream at the end of ORF, which is 200 bp upstream of the end site of the ORF on the complementary strand. The corresponding SEQ ID Nos. for the primers are listed in Table 4, where Fp is the proximal forward primer; Fd is the distal forward primer; Bp is the proximal reverse primer; and Bd is the distal reverse primer. The positions of the 5' ends of each of these primers on the nucleotide sequence of SEQ ID No. 1 are shown in Table 5.

The present invention is not to be limited in scope by the specific embodiments described herein, which are intended as single illustrations of individual aspects of the invention, and functionally equivalent methods and components are within the scope of the invention. Indeed, various modifications of the invention, in addition to those shown and described herein will become apparent to those skilled in the art from the foregoing description and accompanying drawings. Such modifications are intended to fall within the scope of the appended claims.

All publications and patent applications mentioned in this specification are herein incorporated by reference to the same extent as if each individual publication or patent application was specifically and individually indicated to be incorporated by reference.

TABLE 1

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF2	501	208	putative				
ORF3	3276	505	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	379	37
ORF4	5068	3242	lipid A disaccharide synthetase (lpxB)	U32786	*Haemophilus influenzae*	285	40
ORF5	6400	5126	poly(A) polymerase	AE000123	*Escherichia coli*	552	46
ORF6	7977	6619	D-alanine permease (dagA)	U32770	*Haemophilus influenzae*	265	36
ORF7	8582	8082	signalpeptidase II	X78084	*Staphylococcus carnosus*	174	36
ORF8	8995	8591	YteA	AF008220	*Bacillus subtilis*	157	43
ORF9	9440	8979	ORF 168	D28752	*Synechococcus sp.*	318	42
ORF10	9828	10430	unknown	Z80108	*Mycobacterium tuberculosis*	324	46
ORF11	10367	11254	hypothetical protein (SP:P39587)	U67605	*Methanococcus jannaschii*	152	38
ORF12	11245	11916	rRNA methylase	D90913	*Synechocystis sp.*	209	40
ORF13	12068	13324	hypothetical	U32691	*Haemophilus influenzae*	367	45
ORF14	13532	14413	neutral amino acid transporter B0.	U75284	*Oryctolagus cuniculus*	410	39
ORF15	14807	15019	dihydrolipoamide acetyltransferase	L38646	*Saccharopolyspora erythraea*	324	47
ORF16	14932	15969	branched chain alpha-keto acid dehydrogenase E2	M97391	*Bacillus subtilis*	577	44
ORF17	15995	16501	ORF_o328	U18997	*Escherichia coli*	223	44
ORF18	16467	16138	putative				
ORF19	18190	17417	putative outer membrane protein	U80956	*Borrelia burgdorferi*	86	36
ORF20	20521	18437	ORF-2	D11024	*Shigella flexneri*	642	37
ORF21	22202	20814	dnaK like protein (AA 1-660)	X52175	*Chlamydia trachomatis*	2214	99

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF22	22602	22153	ORF, 82 kDa protein	L22180	*Chlamydia trachomatis*	558	89
ORF23	22804	22478	heat shock protein	M62819	*Chlamydia trachomatis*	503	99
ORF24	23183	22824	GrpE-like protein	L25105	*Chlamydia trachomatis*	580	98
ORF25	23394	23110	GrpE-like protein	L25105	*Chlamydia trachomatis*	373	87
ORF26	24569	23394	has homology to putative heat shock proteins of Bacillus subtilis and Clostridium acetobutylicum; ORFA; putative	L25105	*Chlamydia trachomatis*	1999	99
ORF27	26383	24641	aminoacyl-tRNA synthetase	L25105	*Chlamydia trachomatis*	3044	99
ORF28	26640	27710	ORFB; putative	L25105	*Chlamydia trachomatis*	1298	99
ORF29	28780	27725	putative				
ORF30	29957	28740	hypothetical protein	D64004	*Synechocystis sp.*	786	46
ORF31	30721	30032	putative				
ORF32	31281	30520	putative				
ORF33	31436	31780	putative	L46591	*Bartonella bacilliformis*	126	45
ORF34	33356	31800	putative				
ORF35	33901	33314	putative				
ORF36	34116	35027	Yer156cp	U18917	*Saccharomyces cerevisiae*	175	32
ORF37	34988	35359	F21C3.3	Z71261	*Caenorhabditis elegans*	245	44
ORF38	35167	35919	putative				
ORF39	35923	36996	putative				
ORF40	37810	37013	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF41	38207	39085	DAPH synthase-chorismate mutase	AF008220	*Bacillus subtilis*	529	48
ORF42	39151	39927	arginine binding protein	X67753	*Escherichia coli*	192	44
ORF43	39923	40756	putative				
ORF44	40760	42007	hypothetical protein MTCY154.05c	Z98209	*Mycobacterium tuberculosis*	663	43
ORF45	42175	43116	phophoglucoisomerase-like protein	L40822	*Chlamydia trachomatis*	681	95
ORF46	42999	43802	phophoglucoisomerase-like protein	L40822	*Chlamydia trachomatis*	959	91
ORF47	44211	45227	NADP-malate dehydrogenase	L40958	*Flaveria bidentis*	755	42
ORF48	46072	45275	putative				
ORF49	46340	45975	putative				
ORF50	46895	46506	putative				
ORF51	47955	46882	membrane protein (arcD)	M33223	*Pseudomonas aeruginosa*	892	47
ORF52	48585	48178	putative				
ORF53	50072	48630	putative				
ORF54	50710	50099	putative				
ORF55	52439	50925	dehydroquinate dehydratase/shikimate dehydrogenase	L32794	*Nicotiana tabacum*	142	36
ORF56	53484	52348	3-dehydroquinate synthase	D90911	*Synechocystis sp.*	462	39
ORF57	54536	53466	chorismate synthase	X67516	*Synechocystis sp.*	801	56
ORF58	55086	54595	shikimate kinase II	M13045	*Escherichia coli*	154	38
ORF59	56350	55031	5-enolpyruvylshikimate 3-phosphate synthase	U67500	*Methanococcus jannaschii*	355	37
ORF60	55659	56084	putative				
ORF61	56847	58235	putative				
ORF62	58423	59181	dihydrodipicolinate reductase	U47017	*Pseudomonas syringae pv. tabaci*	350	40
ORF63	59185	60195	aspartate-semialdehyde dehydrogenase	U67476	*Methanococcus jannaschii*	590	44

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF64	60188	61483	aspartokinase III	U00006	*Escherichia coli*	312	41
ORF65	61496	62353	dihydrodipicolinate synthetase (dapA)	AE000609	*Helicobacter pylori*	345	42
ORF66	62500	63141	putative				
ORF67	63396	63983	hypothetical protein	Y14084	*Bacillus subtilis*	148	42
ORF68	64628	64071	putative				
ORF69	64285	64656	putative				
ORF70	64944	64609	putative				
ORF71	65347	67269	unknown	D26185	*Bacillus subtilis*	733	44
ORF72	67656	68873	putative				
ORF73	68877	69233	KsgA	Z94752	*Mycobacterium tuberculosis*	156	38
ORF74	69212	69721	high level kasgamycin resistance	D26185	*Bacillus subtilis*	306	43
ORF75	69958	70455	polypeptide deformylase	Y10305	*Calothrix PCC7601*	272	43
ORF76	70701	71006	protein translocation protein, low temperature (secG)	U32727	*Haemophilus influenzae*	90	32
ORF77	73191	71086	putative				
ORF78	74900	73497	putative				
ORF79	75463	74876	homologous to unidentified E. coli protein	M96343	*Bacillus subtilis*	283	34
ORF80	77124	75502	o530; This 530 aa ORF is 33 pct identical (14 gaps) to 525 residues of an approx. 640 aa protein YHES_HAEIN SW: P44808	AE000184	*Escherichia coli*	1447	42
ORF81	77000	77299	putative				
ORF82	78095	77145	integrase-recombinase protein (xerC)	U32750	*Haemophilus influenzae*	495	38
ORF83	79065	78154	hypothetical protein	D64001	*Synechocystis sp.*	400	40
ORF84	81971	79878	LON protease homolog	U88087	*Arabidopsis thaliana*	1927	48
ORF85	82639	83271	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF86	83792	84850	DnaJ	U58360	*Salmonella typhimurium*	822	42
ORF87	84876	86921	putative				
ORF88	88650	87313	putative				
ORF89	87440	87805	putative				
ORF90	88400	88747	putative				
ORF91	88717	89265	putative				
ORF92	89355	89732	Hpr protein	X12832	*Bacillus subtilis*	128	32
ORF93	89735	91447	PTS enzyme I	U12340	*Bacillus stearothermophilus*	671	34
ORF94	91749	91435	ORF107	X17014	*Bacillus subtilis*	120	35
ORF95	92392	91745	putative				
ORF96	93138	92344	dnaZX-like ORF put. DNA polymerase III	X06803	*Bacillus subtilis*	542	53
ORF97	94134	93361	excinuclease ABC subunit A (uvrA)	AE000583	*Helicobacter pylori*	326	36
ORF98	94637	94071	excinuclease ABC subunit A (uvrA)	AE000583	*Helicobacter pylori*	487	40
ORF99	98299	94628	UvrA	D49911	*Thermus thermophilus*	2090	44
ORF100	98715	98113	excinuclease ABC subunit A (uvrA)	AE000583	*Helicobacter pylori*	319	42
ORF101	100228	98741	pyruvate kinase	U83196	*Chlamydia trachomatis*	2411	97
ORF102	101347	100337	hypothetical protein	D90903	*Synechocystis sp.*	494	37
ORF103	102210	101323	YqiE	D84432	*Bacillus subtilis*	471	49
ORF104	102485	102210	putative				
ORF105	104315	102726	exonuclease VII, large subunit (xseA)	U32723	*Haemophilus influenzae*	634	51
ORF106	105075	104254	triose phosphate isomerase	L29475	*Bacillus subtilis*	558	48
ORF107	105259	105894	phosphoribosylanthranilate isomerase	U18969	*Arabidopsis thaliana*	300	38
ORF108	107429	108460	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF109	108665	108955	putative				
ORF110	109459	109013	putative				
ORF111	110366	109704	putative				
ORF112	111330	112520	elongation factor Tu	L22216	*Chlamydia trachomatis*	2007	100
ORF113	112915	113463	transcription antitermination protein (nusG)	U32754	*Haemophilus influenzae*	313	37
ORF114	113566	113994	ribosomal protein L11	D13303	*Bacillus subtilis*	443	59
ORF115	114020	114604	ribosomal protein L1	Z11839	*Thermotoga maritima*	528	54
ORF116	114720	115253	ribosomal protein L10	Z11839	*Thermotoga maritima*	143	38
ORF117	115362	115676	rpl12 (AA 1-128)	X53178	*Synechocystis PCC6803*	254	62
ORF118	116022	119795	DNA-directed RNA polymerase beta chain	X64172	*Staphylococcus aureus*	2675	61
ORF119	119823	124010	DNA-directed RNA polymerase beta' chain (rpoC)	U32733	*Haemophilus influenzae*	3486	50
ORF120	124065	124988	transaldolase	L19437	*Homo sapiens*	677	50
ORF121	124873	125106	transaldolase	U67611	*Homo sapiens*	121	44
ORF122	126261	125536	putative				
ORF123	126328	126930	putative				
ORF124	127138	127785	putative				
ORF125	127924	129714	A1 isoform of vacuolar H+-ATPase subunit A	U22077	*Gallus gallus*	1062	45
ORF126	129720	131033	membrane ATPase	X79516	*Haloferax volcanii*	790	48
ORF127	131018	131629	putative				
ORF128	131834	133156	Na+ -ATPase subunit I	D17462	*Enterococcus hirae*	188	34
ORF129	133075	133584	v-type Na-ATPase	X76913	*Enterococcus hirae*	110	38
ORF130	133625	133999	v-type Na-ATPase	X76913	*Enterococcus hirae*	89	32
ORF131	133861	134508	putative				
ORF132	134638	137454	valyl-tRNA synthetase	D64006	*Synechocystis sp.*	1763	51

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF133	137442	140276	PknD	Z95209	*Mycobacterium tuberculosis*	452	44
ORF134	140733	140335	putative				
ORF135	141799	141077	porphobilinogen deaminase	U22968	*Yersinia pestis*	282	38
ORF136	143240	141780	unknown	D26185	*Bacillus subtilis*	1113	53
ORF137	143829	143128	ORF3	D64116	*Bacillus subtilis*	356	39
ORF138	143923	144393	putative				
ORF139	144548	146326	unknown	Z47210	*Streptococcus pneumoniae*	741	44
ORF140	146413	147078	manganese superoxide dismutase precursor	D12984	*Caenorhabditis elegans*	625	56
ORF141	147140	148075	acetyl-CoA carboxylase beta subunit (accD)	AE000604	*Helicobacter pylori*	704	52
ORF142	148115	148549	Dut	Z96072	*Mycobacterium tuberculosis*	277	53
ORF143	148524	149027	enzyme IIANtr	U18997	*Escherichia coli*	168	44
ORF144	149000	149305	putative				
ORF145	149187	149708	enzyme IIANtr	U18997	*Escherichia coli*	169	43
ORF146	149712	150911	putative				
ORF147	152044	151004	putative				
ORF148	152664	151999	putative				
ORF149	152900	153352	hypothetical	U32702	*Haemophilus influenzae*	292	47
ORF150	153389	153997	hypothetical protein in purB 5' region	AE000213	*Escherichia coli*	555	49
ORF151	155276	153984	ClpC adenosine triphosphatase	U02604	*Bacillus subtilis*	986	45
ORF152	156544	155231	ClpC adenosine triphosphatase	U02604	*Bacillus subtilis*	1535	53
ORF153	156806	157525	putative				
ORF154	157489	158955	Unknown	Y08559	*Bacillus subtilis*	99	39
ORF155	159104	159961	putative				
ORF156	159916	161220	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF157	161183	161593	glycine cleavage protein homolog	U12980	*Saccharomyces cerevisiae*	175	35
ORF158	162354	161623	unidentified protein of Na+-translocating NADH-quinone reductase	D49364	*Vibrio alginolyticus*	524	51
ORF159	163013	162363	NADH:uniquinone oxidoreductase	Z37111	*Vibrio alginolyticus*	543	55
ORF160	163941	162994	NADH:ubiquinone oxidoreductase (GP:Z37111_4)	U32702	*Haemophilus influenzae*	287	54
ORF161	165505	164474	NADH:ubiquinone oxidoreductase subunit B	Z37111	*Vibrio alginolyticus*	449	45
ORF162	166686	166093	H. pylori predicted coding region HP1542	AE000652	*Helicobacter pylori*	111	33
ORF163	168171	166729	pot. ORF 446 (aa 1-446)	X02369	*Bacillus subtilis*	722	42
ORF164	169249	168848	putative				
ORF165	169586	170431	hypothetical protein	D90906	*Synechocystis sp.*	462	48
ORF166	170780	171334	putative				
ORF167	171333	172376	penicillin-binding protein 2	M26645	*Neisseria flavescens*	210	47
ORF168	172309	172722	penicillin-binding protein 2	M26645	*Neisseria flavescens*	176	44
ORF169	173048	174496	murE gene product	Z15056	*Bacillus subtilis*	789	43
ORF170	174399	174968	N-acetylmuramoyl-L-alanine amidase (amiA)	AE000589	*Helicobacter pylori*	177	41
ORF171	175267	175710	integration host factor beta subunit	L35259	*Pseudomonas aeruginosa*	110	38
ORF172	175714	177009	putative				
ORF173	177423	178115	carboxyltransferase alpha subunit	U59236	*Synechococcus PCC7942*	558	50
ORF174	178084	180021	ATP dependent translocator homolog (msbA)	U32691	*Haemophilus influenzae*	453	41
ORF175	180704	180048	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF176	181398	180631	H. pylori predicted coding region HP0152	AE000536	*Helicobacter pylori*	256	34
ORF177	182594	181398	contains similarity to DNA polymerase III, alpha chain (SP:P47277)	AF007270	*Arabidopsis thaliana*	173	50
ORF178	182895	183656	putative Ptc1 protein	Y13937	*Bacillus subtilis*	371	53
ORF179	183665	184786	NifS2	AF008220	*Bacillus subtilis*	452	43
ORF180	186007	184796	similar to [SwissProt Accession Number P37908]	D90888	*Escherichia coli*	93	30
ORF181	186848	186000	hypothetical	U32728	*Haemophilus influenzae*	154	35
ORF182	187270	186749	putative				
ORF183	187426	187809	regulatory protein for beta-lactamase	D90902	*Synechocystis sp.*	96	36
ORF184	189481	188798	putative				
ORF185	189693	190352	prolipoprotein diacylglyceryl transferase	AJ000977	*Rhodobacter sphaeroides*	99	38
ORF186	190235	190510	putative				
ORF187	190785	191786	putative				
ORF188	191790	192464	putative				
ORF189	192392	193183	60 kDa inner-membrane protein	AE000645	*Helicobacter pylori*	373	40
ORF190	193254	194630	DnaA	D89066	*Staphylococcus aureus*	545	43
ORF191	195046	194690	putative				
ORF192	195184	197031	glycogen phosphorylase B	U47025	*Homo sapiens*	1758	56
ORF193	197018	197635	glycogen phosphorylase (AA 1 - 790)	X16931	*Escherichia coli*	580	53
ORF194	197762	198208	unknown	X86470	*Saccharomyces cerevisiae*	148	42
ORF195	198963	197668	F23B12.5	Z77659	*Caenorhabditis elegans*	795	50

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF196	199957	198962	pyruvate dehydrogenase E1 beta subunit	U09137	*Arabidopsis thaliana*	856	48
ORF197	200327	199941	pyruvate dehydrogenase E1 component, alpha subunit	U38804	*Porphyra purpurea*	170	31
ORF198	200685	200266	pyruvate dehydrogenase complex E1 alpha subunit	U81808	*Thiobacillus ferrooxidans*	302	60
ORF199	200962	200585	TPP-dependent acetoin dehydrogenase alpha-subunit	L31844	*Clostridium magnum*	127	43
ORF200	201169	202377	putative				
ORF201	203441	202380	UDP-3-O-[3-hydroxymyristoyl] glucosamine N-acyltransferase	U70214	*Escherichia coli*	577	38
ORF202	203998	203471	putative				
ORF203	206449	204059	OMP1 precursor	U51683	*Brucella abortus*	83	31
ORF204	207425	206811	recombination protein	D90916	*Synechocystis sp.*	334	40
ORF205	207506	208528	beta-ketoacyl-acyl carrier protein synthase III	M77744	*Escherichia coli*	706	50
ORF206	208545	209471	malonyl-CoA:Acyl carrier protein transacylase	U59433	*Bacillus subtilis*	522	48
ORF207	209471	210214	3-ketoacyl-acyl carrier protein reductase	U59433	*Bacillus subtilis*	616	51
ORF208	210586	210816	acyl carrier protein (acpP)	U32701	*Haemophilus influenzae*	220	57
ORF209	211332	210883	protein kinase type II regulatory subunit (, EC 2.7.1.37)	J02934	*Rattus norvegicus*	150	31
ORF210	212978	211374	putative				
ORF211	214134	212875	unknown	AF017105	*Chlamydia psittaci*	852	63
ORF212	214710	214168	inclusion membrane protein C	AF017105	*Chlamydia psittaci*	231	43

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF213	215143	214754	inclusion membrane protein B	AF017105	*Chlamydia psittaci*	181	47
ORF214	216705	215236	sodium-dependent transporter	AF017105	*Chlamydia psittaci*	1341	70
ORF215	217917	216892	amino acid transporter	AF017105	*Chlamydia psittaci*	1027	60
ORF216	217088	217441	putative				
ORF217	218364	218702	putative				
ORF218	218695	219009	putative				
ORF219	219179	219748	putative				
ORF220	219891	220430	putative				
ORF221	220499	221074	putative				
ORF222	221137	221541	putative				
ORF223	221601	222092	putative				
ORF224	222472	223290	putative				
ORF225	223423	223818	LAGLI-DADG endonuclease	U57090	*Chlamydia trachomatis*	619	99
ORF226	224278	225171	YqfU	D84432	*Bacillus subtilis*	530	46
ORF227	225749	225174	phenylacrylic acid decarboxylase	U67467	*Methanococcus jannaschii*	334	52
ORF228	225334	225549	Ydr537cp	U43834	*Saccharomyces cerevisiae*	96	42
ORF229	226654	225749	4-hydroxybenzoate octaprenyltransferase	U61168	*Bacillus firmus*	321	36
ORF230	227299	226769	putative				
ORF231	227646	227161	stationary-phase survival protein (surE)	AE000602	*Helicobacter pylori*	274	48
ORF232	228457	227750	f311; This 311 aa ORF is 22 pct identical (13 gaps) to 186 residues of an approx. 488 aa protein YACA_BACSU SW: P37563; pyu1 of D21139	AE000232	*Escherichia coli*	246	36
ORF233	230001	228607	GadC	AF005098	*Lactococcus lactis*	740	35

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF234	231074	230151	f374; This 374 aa ORF is 30 pct identical (9 gaps) to 102 residues of an approx. 512 aa protein FLIC_SALMU SW: P06177	AE000299	*Escherichia coli*	985	65
ORF235	231348	233006	putative				
ORF236	233059	233829	orf2	D88555	*Methanobacterium thermoautotrophicum*	351	52
ORF237	233801	234265	hypothetical protein	D90906	*Synechocystis sp.*	151	37
ORF238	234282	234854	ORF_o211	U28377	*Escherichia coli*	105	54
ORF239	236300	235227	glutamate 1-semialdehyde 2,1 aminomutase	X82072	*Pseudomonas aeruginosa*	650	52
ORF240	236314	238209	leucine tRNA synthetase	AF008220	*Bacillus subtilis*	1836	61
ORF241	238164	238769	leucine tRNA synthetase	AF008220	*Bacillus subtilis*	410	46
ORF242	238769	240061	3-deoxy-D-manno-2-octulosonic acid (Kdo) transferase	Z22659	*Chlamydia trachomatis*	2240	100
ORF243	242022	240313	pyrophosphate-dependent phosphofructokinase beta subunit	Z32850	*Ricinus communis*	1021	43
ORF244	242846	241941	putative				
ORF245	244480	242798	pyrophosphate-dependent phosphofructokinase beta subunit	Z32850	*Ricinus communis*	1017	42
ORF246	245897	244479	YflS	D86417	*Bacillus subtilis*	951	42
ORF247	246877	245924	putative				
ORF248	247731	246985	ATP binding protein	L18760	*Lactococcus lactis*	442	47
ORF249	248585	247743	sporulation protein	M57689	*Bacillus subtilis*	532	38
ORF250	249420	248569	sporulation protein	M57689	*Bacillus subtilis*	601	38
ORF251	250383	249766	sporulation protein	M57689	*Bacillus subtilis*	464	47
ORF252	251186	250545	oligopeptide permease homolog AII	AF000366	*Borrelia burgdorferi*	119	31
ORF253	252111	251095	sporulation protein	M57689	*Bacillus subtilis*	317	36

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF254	253088	252066	P. haemolytica o-sialoglycoprotein endopeptidase; P36175 (660) transmembrane	D88802	*Bacillus subtilis*	601	46
ORF255	255153	256718	Mg2+ transporter	D90905	*Synechocystis sp.*	103	35
ORF256	256762	257844	tRNA guanine transglycosylase	L33777	*Zymomonas mobilis*	482	44
ORF257	257911	258690	putative				
ORF258	258780	259187	putative				
ORF259	259193	261604	subunit B of DNA gyrase	Y07916	*Salmonella typhimurium*	1925	58
ORF260	261622	264129	DNA gyrase	L47978	*Aeromonas salmonicida*	1963	45
ORF261	264125	264742	unknown	D26185	*Bacillus subtilis*	307	37
ORF262	264741	265628	replication protein (dnaX)	U32802	*Haemophilus influenzae*	162	35
ORF263	266416	265631	putative isozyme of glucose-6-P-dehydrogenase; developmentally regulated gene in heterocyst development	U14553	*Anabaena sp.*	218	47
ORF264	266938	266426	glucose 6-phosphate dehydrogenase	U83195	*Chlamydia trachomatis*	914	99
ORF265	267961	266942	glucose 6-phosphate dehydrogenase	U83195	*Chlamydia trachomatis*	1770	99
ORF266	268320	268066	ORF3	U15192	*Chlamydia trachomatis*	403	100
ORF267	268510	268205	ORF3	U15192	*Chlamydia trachomatis*	320	91
ORF268	270116	268500	CTP synthetase	U15192	*Chlamydia trachomatis*	2828	100

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF269	270892	270095	CMP-2-keto-3-deoxyoctulosonic acid synthetase	U15192	*Chlamydia trachomatis*	1313	100
ORF270	271191	271613	putative				
ORF271	272219	272932	nitrate transporter	X61625	*Synechococcus sp.*	300	34
ORF272	272884	273588	putative				
ORF273	274816	273596	putative				
ORF274	274821	275666	putative				
ORF275	277689	276103	ORF_f535	U28377	*Escherichia coli*	396	38
ORF276	278268	278816	putative				
ORF277	279771	279013	tryptophan synthase alpha subunit	M15826	*Pseudomonas aeruginosa*	357	37
ORF278	280777	279767	tryptophan synthetase	M91661	*Coprinus cinereus*	1042	62
ORF279	281603	281295	tryptophan repressor	L26582	*Enterobacter aerogenes*	151	35
ORF280	282104	281787	putative				
ORF281	284335	282794	putative				
ORF282	284460	284795	putative				
ORF283	284817	285674	putative				
ORF284	285637	286137	putative				
ORF285	286357	286677	putative				
ORF286	286681	287898	hypothetical protein	U88070	*Chlamydia psittaci*	99	35
ORF287	288127	289227	comE ORF1	D64002	*Synechocystis sp.*	90	46
ORF288	289744	290679	hypothetical protein	U88070	*Chlamydia psittaci*	246	36
ORF289	290828	291535	putative				
ORF290	291514	292230	endonuclease	U09868	*Escherichia coli*	160	37
ORF291	292326	293048	putative				
ORF292	293330	294853	putative				
ORF293	295684	295010	glutamine transport ATP-binding protein Q	U67524	*Methanococcus jannaschii*	407	38
ORF294	296336	295692	H. influenzae predicted coding region HI1555	U32830	*Haemophilus influenzae*	134	37
ORF295	297238	296243	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF296	297791	298735	putative				
ORF297	298905	300458	similar to putative oxygenase of S. fradiae	U73857	*Escherichia coli*	82	40
ORF298	302152	300527	putative				
ORF299	304917	302071	putative				
ORF300	306157	304973	DNA ligase	M74792	*Thermus aquaticus thermophilus*	745	41
ORF301	306494	306111	DNA LIGASE (EC 6.5.1.2) (POLYDEOXYRIBONUCLEOTIDE SYNTHASE (NAD+)).	D90870	*Escherichia coli*	197	40
ORF302	306963	306436	Mycoplasma pneumoniae, DNA ligase; similar to Swiss-Prot Accession Number P15042, from E. coli	AE000047	*Mycoplasma pneumoniae*	292	37
ORF303	308773	306977	unknown	Z84395	*Mycobacterium tuberculosis*	316	52
ORF304	309881	309276	putative				
ORF305	310720	309872	putative				
ORF306	311570	310716	putative				
ORF307	312451	311972	Preprotein translocase SecA subunit.	D90832	*Escherichia coli*	123	86
ORF308	313435	314364	sporulation protein	M57689	*Bacillus subtilis*	202	37
ORF309	314340	314738	putative				
ORF310	315526	314741	orfX gene product	X58778	*Klebsiella pneumoniae*	169	45
ORF311	316507	315665	Similar to Saccharomyces cerevisiae SUA5 protein	Z38002	*Bacillus subtilis*	147	41
ORF312	317284	316529	serine esterase [Spirulina platensis, C1, Peptide, 207 aa]	S70419	*Spirulina platensis*	167	58
ORF313	317592	317338	putative				
ORF314	318470	317499	putative				
ORF315	317599	317874	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF316	318947	318477	putative				
ORF317	319342	320142	ORF2	L35036	*Chlamydia psittaci*	802	60
ORF318	320544	321497	putative				
ORF319	321485	321937	putative				
ORF320	321901	322362	putative				
ORF321	322301	323140	putative				
ORF322	323144	324913	putative				
ORF323	325621	324977	YqiZ	D84432	*Bacillus subtilis*	430	43
ORF324	326268	325621	integral membrane protein homolog	U97348	*Lactobacillus fermentum*	343	44
ORF325	326469	327203	adenylate kinase	AB000111	*Synechococcus sp.*	371	46
ORF326	327281	328150	putative				
ORF327	328605	328204	RpsI	Z95389	*Mycobacterium tuberculosis*	315	55
ORF328	329066	328734	50S ribosomal subunit protein L13	U18997	*Escherichia coli*	269	60
ORF329	329663	329292	YqhX	D84432	*Bacillus subtilis*	297	56
ORF330	330666	329608	biotin carboxylase	L14862	*Anabaena sp.*	1089	58
ORF331	331161	330670	YqhW	D84432	*Bacillus subtilis*	208	52
ORF332	331731	331177	elongation factor P	D64001	*Synechocystis sp.*	297	33
ORF333	332404	331721	putative CfxE protein	Y13937	*Bacillus subtilis*	483	55
ORF334	332779	333021	putative				
ORF335	333005	333589	putative				
ORF336	334357	333806	putative				
ORF337	334089	334361	putative				
ORF338	335142	334729	putative				
ORF339	335195	335602	putative				
ORF340	335673	335194	putative				
ORF341	336334	335903	putative				
ORF342	337378	336338	putative				
ORF343	339947	337347	ATP-dependent protease binding subunit	M29364	*Escherichia coli*	2005	53

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF344	340507	341847	Pz-peptidase	D88209	*Bacillus licheniformis*	508	39
ORF345	341783	342022	group B oligopeptidase PepB	U49821	*Streptococcus agalactiae*	140	48
ORF346	342249	342470	hypA protein	M31739	*Chlamydia trachomatis*	361	99
ORF347	342597	343370	heat shock protein	L12004	*Chlamydia trachomatis*	1271	99
ORF348	343361	344032	hypB protein	M31739	*Chlamydia trachomatis*	1051	100
ORF349	343956	344225	hypB protein	M31739	*Chlamydia trachomatis*	344	100
ORF350	344357	345142	orf 3'of chaperonin homolog hypB [Chlamydia psittaci, pigeon strain P-1041, Peptide Partial, 98 aa]	S40172	*Chlamydia psittaci*	344	63
ORF351	345934	345161	o247; This 247 aa ORF is 51 pct identical (0 gaps) to 117 residues of an approx. 160 aa protein YPH7_CHRVI SW: P45371	AE000174	*Escherichia coli*	387	41
ORF352	347102	346080	mutY homolog	U63329	*Homo sapiens*	492	46
ORF353	347113	347940	hypothetical 36.0 kD protein in rne-rpmF intergenic region	AE000209	*Escherichia coli*	397	44
ORF354	350164	348146	putative				
ORF355	350423	351283	enoyl-acyl carrier protein reductase [Brassica napus, Peptide, 385 aa]	S60064	*Brassica napus*	909	64
ORF356	352207	351314	hypothetical protein	D90914	*Synechocystis sp.*	113	42
ORF357	352727	352245	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF358	353709	353305	FUNCTION UNKNOWN, SIMILAR PRODUCT IN E. COLI AND MYCOPLASMA PNEUMONIAE.	AB001488	*Bacillus subtilis*	213	40
ORF359	354218	353670	NADPH thioredoxin reductase	Z23108	*Arabidopsis thaliana*	577	60
ORF360	354721	354140	Thioredoxin Reductase (NADPH)	D45049	*Neurospora crassa*	417	60
ORF361	354966	356672	30S ribosomal protein S1	D90729	*Escherichia coli*	1305	44
ORF362	356700	357377	NusA	U74759	*Chlamydia trachomatis*	948	100
ORF363	357326	358093	NusA	U74759	*Chlamydia trachomatis*	1216	100
ORF364	358035	360743		U74759	*Chlamydia trachomatis*	3311	98
ORF365	360753	361121	ORF6 gene product	Z18631	*Bacillus subtilis*	116	32
ORF366	361162	361884	tRNA pseudouridine 55 synthase	D90917	*Synechocystis sp.*	362	42
ORF367	361826	362746	protein X	M35367	*Pseudomonas fluorescens*	192	49
ORF368	363859	362816	hypothetical GTP-binding protein in pth 3' region	AE000219	*Escherichia coli*	978	52
ORF369	364116	365195	cds1 gene product	U88070	*Chlamydia psittaci*	1631	88
ORF370	365198	365587	cds2 gene product	U88070	*Chlamydia psittaci*	516	93
ORF371	365479	367320	cds2 gene product	U88070	*Chlamydia psittaci*	2817	87
ORF372	367341	368603	copN gene product	U88070	*Chlamydia psittaci*	585	37
ORF373	368644	369081	scc1 gene product	U88070	*Chlamydia psittaci*	528	67
ORF374	369088	370251	No definition line found	U88070	*Chlamydia psittaci*	1362	62
ORF375	370769	371086	ribosomal protein L28 (rpL28)	U32776	*Haemophilus influenzae*	182	46
ORF376	371203	372816	hypothetical protein	U88070	*Chlamydia psittaci*	1926	68
ORF377	373119	373529	hypothetical protein	U88070	*Chlamydia psittaci*	286	49
ORF378	373614	374204	hypothetical protein	U88070	*Chlamydia psittaci*	379	48
ORF379	374736	374224	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF380	376391	374703	putative				
ORF381	377062	376748	corresponds to a 97 amino acid long polypeptide	L40838	*Chlamydia trachomatis*	490	98
ORF382	377853	378737	methylenetetrahydrofolate dehydrogenase	D64000	*Synechocystis sp.*	678	51
ORF383	378626	379048	putative				
ORF384	379017	379403	hypothetical	U32702	*Haemophilus influenzae*	137	45
ORF385	380009	379641	small protein	D90914	*Synechocystis sp.*	216	51
ORF386	380187	381470	DNA polymerase III beta-subunit (dnaN)	U32780	*Haemophilus influenzae*	76	39
ORF387	381473	382567	recombination protein	D26185	*Bacillus subtilis*	477	35
ORF388	382704	383702	putative				
ORF389	383945	383655	hypothetical	U70214	*Escherichia coli*	134	35
ORF390	385217	383949	putative				
ORF391	385507	385178	conserved hypothetical secreted protein	AE000606	*Helicobacter pylori*	185	45
ORF392	386845	385706	hypothetical protein	D64000	*Synechocystis sp.*	686	41
ORF393	386127	386627	putative				
ORF394	387372	386872	ORF1; putative	M26130	*Streptococcus parasanguis*	150	35
ORF395	387823	387338	ytgD	AF008220	*Bacillus subtilis*	168	42
ORF396	388250	387816	TroR	U55214	*Treponema pallidum*	134	40
ORF397	389169	388237	putative protein of 299 amino acids	U30821	*Cyanophora paradoxa*	164	31
ORF398	389955	389173	TroB	U55214	*Treponema pallidum*	592	51
ORF399	390988	389945	YtgA	AF008220	*Bacillus subtilis*	282	30
ORF400	391514	391810	putative				
ORF401	392410	393996	adenine nucleotide translocase	Z49227	*Arabidopsis thaliana*	1295	56
ORF402	394170	395354	lepA gene product	X91655	*Bacillus subtilis*	1235	60
ORF403	395309	395992	GTP-binding membrane protein (lepA)	AE000552	*Helicobacter pylori*	543	54

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF404	396538	396059	phosphogluconate dehydrogenase	U30255	*Homo sapiens*	411	55
ORF405	397507	396542	6-phosphogluconate dehydrogenase	AB006102	*Candida albicans*	908	51
ORF406	398753	397401	tyrosyl-tRNA synthetase	M13148	*Bacillus caldotenax*	844	45
ORF407	399688	398909	whiG-Stv gene product	X68709	*Streptoverticillium griseocarneum*	463	41
ORF408	400167	399778	FLHA gene product	X63698	*Bacillus subtilis*	134	35
ORF409	401224	400034	flbF	M73782	*Caulobacter crescentus*	355	39
ORF410	401776	402021	ferredoxin IV	M59855	*Rhodobacter capsulatus*	98	54
ORF411	402126	403220	putative				
ORF412	403348	405180	GcpE	D90908	*Synechocystis sp.*	995	49
ORF413	403788	403276	putative				
ORF414	405165	405920	YfiH	U50134	*Escherichia coli*	166	43
ORF415	407049	405955	dihydrolipoamide transsuccinylase (odhB; EC 2.3.1.61)	M27141	*Bacillus subtilis*	833	61
ORF416	409773	407056	alpha-ketoglutarate dehydrogenase	U41762	*Rhodobacter capsulatus*	1537	50
ORF417	410532	411416	YqeR	D84432	*Bacillus subtilis*	496	44
ORF418	411707	413410	putative				
ORF419	413433	412606	putative				
ORF420	413404	413952	putative				
ORF421	413841	415112	putative				
ORF422	414379	413978	putative				
ORF423	416664	415177	putative				
ORF424	417456	416740	unknown	Z94752	*Mycobacterium tuberculosis*	172	36
ORF425	418053	417721	putative				
ORF426	418603	418031	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF427	419531	418647	Hc2 nucleoprotein	L10193	*Chlamydia trachomatis*	1661	92
ORF428	420190	419672	[karp] gene products	M86605	*Chlamydia trachomatis*	612	96
ORF429	421171	420245	aminopeptidase	D17450	*Mycoplasma salivarium*	269	41
ORF430	421988	421518	putative	L39923	*Mycobacterium leprae*	165	36
ORF431	422486	423043	putative				
ORF432	423226	425079	glycogen operon protein GlgX	D90908	*Synechocystis sp.*	1229	55
ORF433	426054	425146	putative				
ORF434	426985	426245	Holliday junction specific DNA helicase	D83138	*Pseudomonas aeruginosa*	633	53
ORF435	427248	427817	deoxycytidine triphosphate deaminase (dcd)	AE000554	*Helicobacter pylori*	612	63
ORF436	429560	429886	putative				
ORF437	430360	429857	biotin apo-protein ligase	U27182	*Saccharomyces cerevisiae*	173	38
ORF438	430637	430323	putative				
ORF439	430933	431787	putative				
ORF440	431658	431987	putative				
ORF441	432232	434475	exonuclease V alpha-subunit	U29581	*Escherichia coli*	289	53
ORF442	436308	434620	methionyl-tRNA synthetase	AB004537	*Schizosaccharomyces pombe*	817	54
ORF443	436574	436272	putative				
ORF444	437685	436567	RNAseH II	AF005098	*Lactococcus lactis*	395	47
ORF445	438262	437894	ribosomal protein L19	X72627	*Synechocystis sp.*	287	47
ORF446	439127	438285	tRNA (guanine-N1)-methyltransferase (trmD)	U32705	*Haemophilus influenzae*	374	56
ORF447	439339	438986	tRNA (guanine-N1)-methyltransferase (trmD)	U32705	*Haemophilus influenzae*	199	57

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF448	439705	439358	ribosomal protein S16 (rpS16)	U32705	*Haemophilus influenzae*	168	39
ORF449	441042	439699	signal recognition particle protein	AE000347	*Escherichia coli*	865	40
ORF450	441911	441042	product similar to E.coli PRFA2 protein	Z49782	*Bacillus subtilis*	314	37
ORF451	442593	441898	polypeptide chain release factor 1 (prfA)	U32830	*Haemophilus influenzae*	708	62
ORF452	444505	446388	leader peptidase I	D90904	*Synechocystis sp.*	268	44
ORF453	448068	446452	isoleucyl-tRNA synthetase	U04953	*Homo sapiens*	704	49
ORF454	449575	447932	isoleucyl-tRNA synthetase	U04953	*Homo sapiens*	1687	55
ORF455	450546	451076	putative				
ORF456	451623	451144	putative				
ORF457	452593	451517	putative				
ORF458	453195	452632	putative				
ORF459	453567	454868	product similar to E. coli PhoH protein	Z97025	*Bacillus subtilis*	820	50
ORF460	455430	454972	CydB	Z95554	*Mycobacterium tuberculosis*	105	31
ORF461	456047	455367	cyanide insensitive terminal oxidase	Y10528	*Pseudomonas aeruginosa*	388	38
ORF462	457384	456047	cyanide insensitive terminal oxidase	Y10528	*Pseudomonas aeruginosa*	537	52
ORF463	457659	458450	YbbP	AB002150	*Bacillus subtilis*	324	42
ORF464	458508	459632	putative				
ORF465	459839	461203	HtrB protein	X61000	*Escherichia coli*	77	31
ORF466	461624	461196	unknown	U87792	*Bacillus subtilis*	114	38
ORF467	461887	462621	hypothetical protein	Z75208	*Bacillus subtilis*	148	51
ORF468	463758	462895	putative				
ORF469	464048	464629	putative				
ORF470	464721	465848	putative				
ORF471	467420	466113	PET112	D90913	*Synechocystis sp.*	892	48

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF472	468891	467419	amidase	U49269	*Moraxella catarrhalis*	1051	46
ORF473	469280	468906	putative				
ORF474	469349	469675	putative				
ORF475	471226	469826	putative				
ORF476	471624	471106	putative				
ORF477	471954	473267	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	173	33
ORF478	473252	473695	POMP90A precursor	U65942	*Chlamydia psittaci*	175	39
ORF479	473982	474527	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	193	38
ORF480	475198	474602	putative				
ORF481	476527	475613	POMP91A	U65942	*Chlamydia psittaci*	100	38
ORF482	478640	476517	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	537	40
ORF483	479084	478665	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	234	35
ORF484	479723	479088	putative outer membrane protein	U72499	*Chlamydia psittaci*	313	40
ORF485	480012	479668	putative				
ORF486	481466	479895	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	391	38
ORF487	481732	481496	putative				
ORF488	481864	483429	POMP90A precursor	U65942	*Chlamydia psittaci*	114	40
ORF489	483402	484964	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	77	34
ORF490	484898	487864	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	506	39
ORF491	485725	485222	putative				
ORF492	488204	489247	putative				
ORF493	488571	488233	putative				
ORF494	489440	490456	putative				
ORF495	492765	490507	branching enzyme	M31544	*Synechococcus PCC6301*	1624	57

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF496	492357	492893	putative				
ORF497	493744	492737	putative				
ORF498	493875	494675	YqkM	D84432	*Bacillus subtilis*	230	44
ORF499	494573	494869	xprB	M54884	*Escherichia coli*	245	48
ORF500	494835	495365	putative				
ORF501	495174	494872	putative				
ORF502	495687	496634	putative				
ORF503	496295	497176	putative				
ORF504	497703	498515	putative				
ORF505	498280	499239	putative				
ORF506	499215	500732	putative				
ORF507	501710	500790	penicillin tolerance protein (lytB)	U32781	*Haemophilus influenzae*	702	50
ORF508	502863	501808	putative				
ORF509	503675	502692	putative				
ORF510	505002	503722	hypothetical protein	Z96072	*Mycobacterium tuberculosis*	102	42
ORF511	505739	506986	hypothetical protein in pth-prs intergenic region	AE000219	*Escherichia coli*	740	44
ORF512	506999	507439	putative				
ORF513	508404	507649	fumarate hydratase	AF013216	*Myxococcus xanthus*	611	54
ORF514	508291	508590	putative				
ORF515	508915	508478	fumarase	D64000	*Synechocystis sp.*	386	57
ORF516	509600	510691	thiamine-repressed protein (nmt1)	U32720	*Haemophilus influenzae*	82	31
ORF517	511039	511527	putative				
ORF518	511547	512185	hypothetical protein (SP:P46851)	U67608	*Methanococcus jannaschii*	208	39
ORF519	512382	513092	methionine amino peptidase	M15106	*Escherichia coli*	384	46
ORF520	514287	513055	putative				
ORF521	514789	515244	putative				
ORF522	514994	515269	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF523	515553	515804	putative				
ORF524	515808	516422	putative				
ORF525	516476	517171	putative				
ORF526	517927	517400	orf150 gene product	X95938	*Porphyromonas gingivalis*	340	51
ORF527	518096	518380	30S ribosomal protein S15	D90901	*Synechocystis sp.*	245	52
ORF528	518403	518822	polynucleotide phosphorylase	AF010578	*Pisum sativum*	306	49
ORF529	518923	519516	polyribonucleotide phophorylase	U52048	*Spinacia oleracea*	387	47
ORF530	519577	520497	polynucleotide phosphorylase	U18997	*Escherichia coli*	860	54
ORF531	521986	520718	ATP-binding protein	U01376	*Escherichia coli*	970	49
ORF532	522131	521886	cell division protein (ftsH)	U32812	*Haemophilus influenzae*	314	76
ORF533	523495	522143	putative				
ORF534	524591	523623	ORF327 gene product	U38804	*Porphyra purpurea*	148	44
ORF535	524652	525746	putative				
ORF536	525731	526078	putative				
ORF537	525939	526400	putative				
ORF538	526301	526735	putative				
ORF539	528323	526851	putative				
ORF540	528861	528292	putative				
ORF541	529723	529142	phenylalanyl-tRNA synthetase alpha subunit	X53057	*Bacillus subtilis*	476	52
ORF542	530166	529624	phenylalany-tRNA synthetase beta subunit	Z75208	*Bacillus subtilis*	164	40
ORF543	530543	530223	ribosomal protein L20 (AA 1-119)	X16188	*Bacillus stearothermophilus*	230	47
ORF544	531378	530737	unknown	Z85982	*Mycobacterium tuberculosis*	452	50
ORF545	532370	533272	UDP-N-acetylenolpyruvylglucosamine reductase	U86147	*Synechococcus PCC7942*	488	43

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF546	533849	533244	YtqB	AF008220	*Bacillus subtilis*	273	38
ORF547	534672	533944	hypothetical protein MTCY08D5.03c	Z92669	*Mycobacterium tuberculosis*	170	35
ORF548	535915	534878	ribonucleoside diphosphate reductase, beta subunit (nrdB)	AE000553	*Helicobacter pylori*	397	33
ORF549	539153	535956	ribonucleoside-diphosphate reductase 1 alpha subunit (nrdA)	AE000581	*Helicobacter pylori*	1447	51
ORF550	539731	540519	phosphatidylserine synthase (pssA)	AE000614	*Helicobacter pylori*	226	49
ORF551	540523	540969	putative				
ORF552	540906	541805	hypothetical 54.7 kD protein in udp 3' region precursor (o475)	AE000459	*Escherichia coli*	82	39
ORF553	543255	541825	Ydr430cp; CAI: 0.15	U33007	*Saccharomyces cerevisiae*	130	48
ORF554	544133	543222	putative				
ORF555	544565	544179	hypA gene product	X86493	*Clostridium perfringens*	221	46
ORF556	544762	544487	orf1 gene product	X70951	*Saccharomyces cerevisiae*	153	38
ORF557	546423	544951	serine protease (htrA)	AE000610	*Helicobacter pylori*	981	46
ORF558	547480	546584	succinyl coenzyme A synthetase alpha subunit	U23408	*Dictyostelium discoideum*	869	63
ORF559	546789	547382	putative				
ORF560	547901	547476	putative succinyl-coA synthetase beta chain	AJ000975	*Bacillus subtilis*	388	55
ORF561	548634	547900	succinate--CoA ligase (ADP-forming)	X54073	*Thermus aquaticus flavus*	498	46
ORF562	548692	549459	cell division protein (ftsY)	AE000588	*Helicobacter pylori*	330	46
ORF563	550385	549663	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF564	551611	550421	Tyrosine-specific transport protein (Tyrosine permease).	D90832	*Escherichia coli*	508	40
ORF565	553041	551797	tyrosine-specific transport protein (tyrP)	U32730	*Haemophilus influenzae*	353	36
ORF566	554946	553096	L-glutamine:D-fructose-6-P amidotransferase precursor	U17352	*Thermus aquaticus thermophilus*	1324	45
ORF567	556300	554927	hypothetical	U32824	*Haemophilus influenzae*	1009	51
ORF568	556524	556904	putative				
ORF569	558126	557314	putative				
ORF570	557810	558235	putative				
ORF571	559215	558310	putative				
ORF572	561349	559196	POMP91A	U65942	*Chlamydia psittaci*	245	39
ORF573	562931	561150	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	130	38
ORF574	564083	563121	putative PlsX protein	Y13937	*Bacillus subtilis*	519	45
ORF575	563593	563943	putative				
ORF576	565379	566953	ORF_f495; orfF of ECMRED, uses 2nd start	U18997	*Escherichia coli*	874	39
ORF577	567079	567966	glycerol-3-phosphate acyltransferase	M80571	*Cucumis sativus*	594	45
ORF578	568021	570399	insulin-degrading enzyme	M58465	*Drosophila melanogaster*	334	42
ORF579	571269	572021	putative				
ORF580	572519	572755	putative				
ORF581	573519	572731	unknown	Z94752	*Mycobacterium tuberculosis*	203	35
ORF582	572879	573427	putative				
ORF583	574160	573660	putative heat shock protein ORF; putative	M62820	*Chlamydia trachomatis*	315	83

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF584	574426	574184	ribosomal protein S18 homolog; putative	M62820	*Chlamydia trachomatis*	384	99
ORF585	574781	574446	ribosomal protein S6 (rps6)	AE000630	*Helicobacter pylori*	176	39
ORF586	575243	574923	peptidyl-tRNA hydrolase	U31570	*Chlamydia trachomatis*	358	78
ORF587	575458	575057	peptidyl-tRNA hydrolase	U31570	*Chlamydia trachomatis*	393	81
ORF588	575849	575469	partial ctc gene product (AA 1-186)	X16518	*Bacillus subtilis*	94	37
ORF589	576545	578023	glycogen (starch) synthase	D90899	*Synechocystis sp.*	695	48
ORF590	578673	578017	phosphatidylglycerophosphate synthase	U87792	*Bacillus subtilis*	243	48
ORF591	579012	582104	glycyl-tRNA synthetase	U20547	*Chlamydia trachomatis*	5054	99
ORF592	582697	582206	putative				
ORF593	583122	582811	putative				
ORF594	583514	583182	putative				
ORF595	583869	583438	putative				
ORF596	584435	583827	dnaG	AB001896	*Staphylococcus aureus*	298	41
ORF597	584967	584299	DNA primase	U13165	*Listeria monocytogenes*	339	41
ORF598	585297	585016	putative				
ORF599	585240	586610	DNA mismatch repair protein	D90909	*Synechocystis sp.*	673	42
ORF600	586484	587758	DNA mismatch repair protein	U71154	*Aquifex pyrophilus*	845	50
ORF601	587786	589408	excinuclease ABC subunit C (uvrC)	U32691	*Haemophilus influenzae*	719	46
ORF602	589198	589578	exinuclease ABC subunit C	U29587	*Rhodobacter sphaeroides*	156	42

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF603	590061	589630	putative				
ORF604	590739	591272	putative				
ORF605	592406	592765	homologous to E.coli rnpA	X62539	*Bacillus subtilis*	117	34
ORF606	593145	592849	putative				
ORF607	593900	593121	putative				
ORF608	594138	595637	cys-tRNA synthetase (cysS)	U32693	*Haemophilus influenzae*	991	49
ORF609	596122	595640	lysyl-tRNA synthetase	D90906	*Synechocystis sp.*	375	53
ORF610	596864	596154	lysine--tRNA ligase	X70708	*Thermus aquaticus thermophilus*	571	52
ORF611	597731	597282	putative				
ORF612	598524	600809	putative PriA protein	Y13937	*Bacillus subtilis*	1097	38
ORF613	601876	600734	L-alanine - pimelyl CoA ligase	U51868	*Bacillus subtilis*	242	42
ORF614	603523	601910	2-acylglycerophosphoethanolamine acyltransferase/acyl carrier protein synthetase	L14681	*Escherichia coli*	388	42
ORF615	603794	603531	putative				
ORF616	604413	603757	putative				
ORF617	604549	605610	3'(2'),5-diphosphonucleoside 3'(2') phosphohydrolase	U33283	*Oryza sativa*	254	45
ORF618	606619	605582	leucine dehydrogenase	X79068	*Thermoactinomyces intermedius*	638	49
ORF619	606843	607493	inorganic pyrophosphatase	X57545	*Arabidopsis thaliana*	291	37
ORF620	609068	608031	beta-ketoacyl-ACP synthase	L13242	*Ricinus communis*	1069	57
ORF621	609652	609296	HI0034 homolog	U82598	*Escherichia coli*	196	36
ORF622	611860	610109	putative				
ORF623	611812	612927	conserved hypothetical protein	AE000579	*Helicobacter pylori*	780	41

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF624	613597	612938	trna delta(2)-isopentenylpyrophosphate transferase	Z98209	*Mycobacterium tuberculosis*	244	37
ORF625	613952	613692	delta2-isopentenylpyrophosphate tRNA transferase	Z11831	*Escherichia coli*	134	54
ORF626	614315	615244	putative				
ORF627	615396	615683	unknown	Z74024	*Mycobacterium tuberculosis*	93	47
ORF628	617711	615864	D-alanine:D-alanine ligase	U39788	*Enterococcus hirae*	555	38
ORF629	618313	617510	UDP-N-acetylmuramate-alanine ligase (murC)	U32794	*Haemophilus influenzae*	448	47
ORF630	619338	618361	transferase, peptidoglycan synthesis (murG)	U32793	*Haemophilus influenzae*	380	39
ORF631	620416	619247	spoVE gene product (AA 1-366)	X51419	*Bacillus subtilis*	538	37
ORF632	619863	620261	putative				
ORF633	621184	620420	hypothetical protein	Y14079	*Bacillus subtilis*	313	44
ORF634	621690	621154	murD gene product (AA 1-438)	X51584	*Escherichia coli*	221	43
ORF635	622399	621674	MurD	Z95388	*Mycobacterium tuberculosis*	228	41
ORF636	623466	622414	ORF-Y (AA 1-360)	X51584	*Escherichia coli*	543	45
ORF637	624178	623570	PROBABLE UDP-N-ACETYLMURAMOYLALANYL-D-GLUTAMYL-2, 6-DIAMINOLIGASE (EC 6.3.2.15).	AB001488	*Bacillus subtilis*	103	43

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF638	624918	624073	UDP-N-acetylmuramoylalanyl-D glutamyl-2, 6-diaminopimelate--D-alanyl-D-alanine ligase	X62437	*Synechocystis sp.*	243	33
ORF639	625346	626665	chaperonin 60	U56021	*Thermoanaerobacter brockii*	136	31
ORF640	626514	626900	putative				
ORF641	626954	627853	putative				
ORF642	627822	628124	putative				
ORF643	628715	628146	elongation factor P	U14003	*Escherichia coli*	467	55
ORF644	628932	629801	AMP nucleosidase (EC 3.2.2.4).	D90837	*Escherichia coli*	278	47
ORF645	630406	629804	transketolase	Z73234	*Bacillus subtilis*	361	46
ORF646	630960	630298	transketolase	Z73234	*Bacillus subtilis*	460	47
ORF647	631799	630915	transketolase 1 (TK 1) (tktA)	U32783	*Haemophilus influenzae*	756	47
ORF648	637488	638084	alanyl-tRNA synthetase	X59956	*Rhizobium leguminosarum*	436	56
ORF649	638036	640207	alanyl-tRNA synthetase	X95571	*Thiobacillus ferrooxidans*	1121	39
ORF650	640221	643472	transcription-repair coupling factor (trcF) (mfd)	U32805	*Haemophilus influenzae*	1426	46
ORF651	640627	640220	putative				
ORF652	643485	644495	uroporphyrinogen decarboxylase	M97208	*Bacillus subtilis*	416	40
ORF653	644471	645430	putative oxygen-independent coproporphyrinogen III oxidase	U06779	*Salmonella typhimurium*	638	43
ORF654	645394	645840	oxygen independent coprophorphyrinogen III oxidase	D90912	*Synechocystis sp.*	283	42

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF655	645840	647111	hemY	M97208	*Bacillus subtilis*	133	38
ORF656	649676	647109	phosphoprotein	L25078	*Chlamydia trachomatis*	2043	99
ORF657	649970	650344	Hc1	M60902	*Chlamydia trachomatis*	603	100
ORF658	650418	651722	pCTHom1 gene product	M94254	*Chlamydia trachomatis*	1735	100
ORF659	651686	652171	putative				
ORF660	652516	652908	phenolhydroxylase component	U32702	*Haemophilus influenzae*	263	41
ORF661	652799	653593	phenolhydroxylase component	U32702	*Haemophilus influenzae*	456	51
ORF662	659884	661851	YtpT	AF008220	*Bacillus subtilis*	709	52
ORF663	661740	662282	spoIIIEB protein	M17445	*Bacillus subtilis*	330	43
ORF664	662286	663074	yycJ	D78193	*Bacillus subtilis*	405	38
ORF665	662951	663730	C41G7.4	Z81048	*Caenorhabditis elegans*	200	36
ORF666	664212	663745	hypothetical protein MTCY180.08	Z97193	*Mycobacterium tuberculosis*	194	38
ORF667	665619	664255	D-alanine glycine permease (dagA)	AE000603	*Helicobacter pylori*	205	34
ORF668	666083	665727	putative				
ORF669	666423	665782	putative				
ORF670	666831	668117	putative				
ORF671	668121	668375	putative				
ORF672	668470	668174	riboflavin synthase beta chain (ribE)	U32810	*Haemophilus influenzae*	192	40
ORF673	669533	668616	GTP cyclohydrolase II / 3,4-dihydroxy-2-butanone-4-phoshate synthase	AJ000053	*Arabidopsis thaliana*	800	51
ORF674	669892	669485	unnamed protein product	A38767	*Saccharomyces cerevisiae*	288	49
ORF675	670780	669998	ribG gene product	L09228	*Bacillus subtilis*	191	42

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF676	671241	670732	riboflavin-specific deaminase	U27202	*Actinobacillus pleuropneumoniae*	314	51
ORF677	671182	672447	seryl-tRNA synthetase	X91007	*Haloarcula marismortui*	736	49
ORF678	672692	673231	putative				
ORF679	673204	674562	ATPase	L28104	*Transposon Tn5422*	565	41
ORF680	674612	675232	unknown	Z74025	*Mycobacterium tuberculosis*	340	43
ORF681	675327	676463	rod-shape-determining protein	M22857	*Escherichia coli*	442	37
ORF682	677027	676476	biotin [acetyl-CoA carboxylase] ligase	L02354	*Paracoccus denitrificans*	169	49
ORF683	678422	677700	ORFX13	L09228	*Bacillus subtilis*	426	43
ORF684	678717	679508	2,3-bisphosphoglycerate	M23068	*Homo sapiens*	494	47
ORF685	679342	680502	synthesis of [Fe-S] cluster (nifS)	AE000542	*Helicobacter pylori*	150	33
ORF686	680579	681280	NifU	AF001780	*Cyanothece PCC 8801*	101	31
ORF687	681539	682558	putative				
ORF688	682554	683087	putative				
ORF689	683164	684465	ORF 4	M72718	*Bacillus subtilis*	708	36
ORF690	684774	684418	putative				
ORF691	684839	686203	AgX-1 antigen [human, infertile patient, testis, Peptide, 505 aa]	S73498	*Homo sapiens*	338	37
ORF692	686197	687204	L-glycerol 3-phosphate dehydrogenase	U00039	*Escherichia coli*	577	38
ORF693	687341	688360	putative				
ORF694	688432	688193	putative				
ORF695	689616	688432	putative				
ORF696	689960	689631	putative				
ORF697	690487	689846	putative				
ORF698	690717	690463	putative				
ORF699	691871	690672	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF700	693837	692041	phosphoenolpyruvate carboxykinase	M59372	*Neocallimastix frontalis*	1818	59
ORF701	694934	693837	MreB protein	M96343	*Bacillus subtilis*	961	56
ORF702	697263	694942	SNF	X98455	*Bacillus cereus*	1073	50
ORF703	698084	697170	putative				
ORF704	698392	697979	putative				
ORF705	698792	700117	trigger factor (tig)	AE000591	*Helicobacter pylori*	84	34
ORF706	700269	700895	proteosome major subunit	AF013216	*Myxococcus xanthus*	615	59
ORF707	700912	702165	ATP-dependent protease ATPase subunit	L18867	*Escherichia coli*	1183	55
ORF708	702183	703412	poly(A) polymerase	L47709	*Bacillus subtilis*	362	38
ORF709	703522	705000	hypothetical protein	D90912	*Synechocystis sp.*	809	41
ORF710	705011	705604	putative				
ORF711	706159	705704	Preprotein translocase subunit	AF022186	*Cyanidium caldarium*	165	44
ORF712	706521	706138	secA	X99401	*Bacillus firmus*	155	42
ORF713	708103	706496	SecA	U66081	*Mycobacterium smegmatis*	1044	58
ORF714	708398	708078	cp-SecA; chloroplast SecA homolog	U71123	*Zea mays*	258	69
ORF715	708610	708248	SecA	U21192	*Streptomyces lividans*	179	42
ORF716	710278	708872	putative				
ORF717	711164	710262	phosphatidylserine decarboxylase	U72715	*Chlamydia trachomatis*	1548	99
ORF718	711432	712763	homologous to E.coli 50K	X62539	*Bacillus subtilis*	713	54
ORF719	712767	713438	ultraviolet N-glycosylase/AP lyase	U22181	*Micrococcus luteus*	273	45
ORF720	714232	713651	putative				
ORF721	714632	714120	putative				
ORF722	715592	714834	putative				
ORF723	715854	715558	putative				
ORF724	716937	715921	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF725	718357	717149	3-phosphoglycerate kinase	U83197	*Chlamydia trachomatis*	2049	100
ORF726	718500	718862	putative				
ORF727	719797	718499	phosphate permease (YBR296C)	U32834	*Haemophilus influenzae*	997	42
ORF728	720273	719782	putative				
ORF729	720452	720144	H. influenzae predicted coding region HI1603	U32834	*Haemophilus influenzae*	164	37
ORF730	720613	721575	dciAD	X56678	*Bacillus subtilis*	722	41
ORF731	721559	722356	was dppE	U00039	*Escherichia coli*	477	44
ORF732	723248	722397	chromosome partitioning protein ParB	U87804	*Caulobacter crescentus*	388	50
ORF733	724598	723378	NifS protein.	D90811	*Escherichia coli*	805	39
ORF734	725763	724576	hypothetical protein	D64004	*Synechocystis sp.*	154	41
ORF735	726519	725767	Multidrug resistance protein 1 (P-glycoprotein 1).	D90811	*Escherichia coli*	607	54
ORF736	726819	726538	ABC transporter subunit	D64004	*Synechocystis sp.*	266	58
ORF737	727493	726753	ABC transporter subunit	D64004	*Synechocystis sp.*	854	71
ORF738	727984	727469	ABC transporter subunit	D64004	*Synechocystis sp.*	531	55
ORF739	728778	728329	putative				
ORF740	729346	728759	antiviral protein	L36940	*Saccharomyces cerevisiae*	115	33
ORF741	732639	729442	penicillin-binding protein 2 (pbp2)	U32688	*Haemophilus influenzae*	208	43
ORF742	733246	734427	major outer membrane protein precursor	M14738	*Chlamydia trachomatis*	2045	99
ORF743	734814	735659	ribosomal protein S2	U60196	*Chlamydia trachomatis*	1269	76
ORF744	735644	736504	elongation factor Ts	U60196	*Chlamydia trachomatis*	1278	90
ORF745	736520	737254	UMP kinase	U60196	*Chlamydia trachomatis*	1153	94

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF746	737254	737787	ribosome-releasing factor	U60196	*Chlamydia trachomatis*	760	92
ORF747	737942	738679	putative				
ORF748	738838	739740	ORF3; putative 39 kDa protein	U40604	*Listeria monocytogenes*	116	31
ORF749	742057	740060	XcpQ	X68594	*Pseudomonas aeruginosa*	453	37
ORF750	742869	742045	putative				
ORF751	743378	742824	putative				
ORF752	744298	743306	unknown	Z80233	*Mycobacterium tuberculosis*	137	40
ORF753	744714	744430	putative	M69228	*Caulobacter crescentus*	117	38
ORF754	744985	744611	putative				
ORF755	745557	744958	putative				
ORF756	746412	745561	putative				
ORF757	746772	746416	putative				
ORF758	748269	746944	PscN	AF010151	*Pseudomonas aeruginosa*	1220	55
ORF759	748966	748274	putative				
ORF760	749426	748965	putative				
ORF761	749702	749433	putative				
ORF762	750029	749721	putative				
ORF763	752307	750007	putative				
ORF764	752913	752503	putative				
ORF765	754659	753616	NAD(P)H:glutamyl-transfer RNA reductase	M57676	*Bacillus subtilis*	172	40
ORF766	755000	756814	DNA gyrase subunit B	U35453	*Clostridium acetobutylicum*	970	38
ORF767	756796	758301	gyrA	X92503	*Mycobacterium smegmatis*	409	49
ORF768	758691	758446	unknown	Z74024	*Mycobacterium tuberculosis*	107	34

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF769	759787	759338	SfhB	U50134	*Escherichia coli*	241	48
ORF770	760242	759871	putative				
ORF771	760538	760188	putative				
ORF772	760966	761772	3-deoxy-D-manno-octulosonate 8-phosphate synthetase	U72493	*Chlamydia trachomatis*	1350	99
ORF773	761759	762142	unknown	U72493	*Chlamydia trachomatis*	536	94
ORF774	762267	762983	ATP binding protein	U72493	*Chlamydia trachomatis*	1197	99
ORF775	764465	763335	chlanectin coding region	M17875	*Chlamydia trachomatis*	239	100
ORF776	764857	764438	putative				
ORF777	766068	764821	unknown function	Z32530	*Chlamydia trachomatis*	1803	99
ORF778	766643	766065	unknown function	Z32530	*Chlamydia trachomatis*	704	100
ORF779	768091	766934	RecA	U16739	*Chlamydia trachomatis*	1753	100
ORF780	768785	768252	unknown function	Z32530	*Chlamydia trachomatis*	904	99
ORF781	770092	768791	unknown function	Z32530	*Chlamydia trachomatis*	2249	100
ORF782	770138	770470	putative				
ORF783	770661	770185	putative				
ORF784	770924	770634	putative				
ORF785	772010	771330	putative				
ORF786	772390	773391	unknown	D26185	*Bacillus subtilis*	486	35
ORF787	774221	773427	ORF_f169	U18997	*Escherichia coli*	263	51
ORF788	776035	774191	DNA topoisomerase I	L27797	*Bacillus subtilis*	1357	52
ORF789	776663	777706	putative				
ORF790	777195	776953	putative				
ORF791	779222	777732	ORF_f397	U29581	*Escherichia coli*	93	40

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF792	779321	781552	putative				
ORF793	781297	782442	putative				
ORF794	782447	785524	exonuclease V (AA 1-1180)	X04581	*Escherichia coli*	557	49
ORF795	785532	786002	putative				
ORF796	786580	785546	MreC protein	M31792	*Escherichia coli*	81	64
ORF797	787741	786611	aspartate aminotransferase precursor	M12105	*Gallus gallus*	700	42
ORF798	787620	788021	putative				
ORF799	790124	787920	GreA	U02878	*Rickettsia prowazekii*	84	33
ORF800	790160	790609	putative				
ORF801	790634	792016	NADH:ubiquinone oxidoreductase subunit A	Z37111	*Vibrio alginolyticus*	409	37
ORF802	793084	792059	delta_aminolevulinic acid dehydratase	L24386	*Bradyrhizobium japonicum*	867	52
ORF803	793343	794056	putative				
ORF804	794046	794957	putative				
ORF805	795401	795144	putative				
ORF806	795575	796255	ompR gene product	X92405	*Neisseria meningitidis*	103	32
ORF807	796278	797015	glucose-1-phosphate thymidylyltransferase	U67553	*Methanococcus jannaschii*	216	36
ORF808	796979	797365	YqiD	D84432	*Bacillus subtilis*	184	58
ORF809	797260	797856	farnesyl diphosphate synthase	D13293	*Bacillus stearothermophilus*	107	37
ORF810	797772	798086	putative				
ORF811	798426	797935	Orf39.9	X61000	*Escherichia coli*	290	51
ORF812	798925	798416	This ORF is homologous to a 40.0 kd hypothetical protein in the htrB 3' region from E. coli, Accession Number X61000	L22217	*Mycoplasma-like organism*	150	46

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF813	799301	799927	ribosomal protein S4 (rps4)	AE000633	*Helicobacter pylori*	407	46
ORF814	800892	800029	apurinic/apyrimidinic endonuclease	U40707	*Caenorhabditis elegans*	397	35
ORF815	801062	802129	mviB homolog	U50732	*Chlamydia trachomatis*	1716	97
ORF816	802023	802673	mviB homolog	U50732	*Chlamydia trachomatis*	973	97
ORF817	802851	803246	lorf2; possible membrane-bound protein	U50732	*Chlamydia trachomatis*	280	100
ORF818	803105	804220	76 kDa protein	L23921	*Chlamydia pneumoniae*	775	59
ORF819	804307	805356	putative				
ORF820	805290	806282	76 kDa protein	L23921	*Chlamydia pneumoniae*	125	50
ORF821	806453	808081	putative				
ORF822	808026	809009	putative				
ORF823	810461	809079	putative				
ORF824	811605	810328	putative				
ORF825	811725	812342	putative				
ORF826	812329	813522	putative				
ORF827	813455	813772	putative				
ORF828	813732	814334	putative				
ORF829	815213	814314	putative				
ORF830	814878	814396	putative				
ORF831	815733	815428	30S ribosomal protein S20	Z67753	*Odontella sinensis*	150	38
ORF832	816116	817456	KIAA0336	AB002334	*Homo sapiens*	90	32
ORF833	817608	819320	RNA polymerase sigma-subunit	J05546	*Chlamydia trachomatis*	2868	100
ORF834	819324	819713	putative				
ORF835	819704	820402	dihydropterin pyrophosphokinase /dihydropteroate synthase	Y08611	*Pisum sativum*	310	45
ORF836	820375	821061	dihydropteroate synthase	X68068	*Neisseria meningitidis*	100	48

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF837	821043	821537	dihydrofolate reductase	Z84379	*Streptococcus pneumoniae*	168	45
ORF838	821646	822239	M. jannaschii predicted coding region MJ0768	U67522	*Methanococcus jannaschii*	139	41
ORF839	822182	822931	putative				
ORF840	824355	823045	nitrogen metabolism regulator	M58480	*Thiobacillus ferrooxidans*	133	58
ORF841	825894	824359	helicase	M63176	*Staphylococcus aureus*	893	50
ORF842	826322	825879	helicase	M63176	*Staphylococcus aureus*	282	47
ORF843	826340	827026	ipa-57d gene product	X73124	*Bacillus subtilis*	602	52
ORF844	827014	827250	putative				
ORF845	827856	827230	hypothetical	U32712	*Haemophilus influenzae*	302	45
ORF846	828007	829275	19/20 residue stretch (32-51) identical to N-terminal putative signal sequence of unknown, partly cloned B. subtilis gene.; putative	L19954	*Bacillus subtilis*	442	37
ORF847	829355	830953	heat shock protein GroEL	U55047	*Bradyrhizobium japonicum*	418	36
ORF848	831119	831748	basl protein	Z34917	*Hordeum vulgare*	516	47
ORF849	832152	831751	putative				
ORF850	832744	832214	putative				
ORF851	833446	832805	putative				
ORF852	833802	833368	putative				
ORF853	834679	833879	putative				
ORF854	835452	834661	putative				
ORF855	835778	835371	putative				
ORF856	836482	835775	putative				
ORF857	836602	837264	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF858	837209	838699	putative				
ORF859	838760	839575	putative				
ORF860	839942	840583	putative				
ORF861	840445	841713	putative				
ORF862	841659	842459	putative				
ORF863	842523	843068	putative				
ORF864	843495	843031	putative				
ORF865	843239	846196	putative				
ORF866	844137	843802	putative				
ORF867	848043	846217	putative				
ORF868	850123	848150	putative				
ORF869	851645	850230	putative				
ORF870	853696	851669	putative				
ORF871	854836	853700	putative				
ORF872	855525	854920	putative				
ORF873	856240	855437	putative				
ORF874	857183	856233	putative				
ORF875	859439	857451	putative				
ORF876	859946	859587	putative				
ORF877	859642	860640	putative				
ORF878	861599	860724	putative				
ORF879	862053	861580	putative				
ORF880	863540	862098	putative				
ORF881	863930	863571	putative				
ORF882	864697	863996	putative				
ORF883	864923	866248	DNA mismatch repair protein (mutL)	U32692	*Haemophilus influenzae*	506	47
ORF884	866303	866605	putative				
ORF885	866665	867732	YqhT	D84432	*Bacillus subtilis*	444	39
ORF886	867810	869090	putative				
ORF887	869094	869357	putative				
ORF888	869270	871372	fimbrial assembly protein	L13865	*Pseudomonas aeruginosa*	181	40

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF889	871299	872582	xpsE gene product	X59079	*Xanthomonas campestris*	825	56
ORF890	872429	872860	secretion protein XcpR	Y09102	*Acinetobacter calcoaceticus*	213	48
ORF891	872773	873915	ORF_o398	U18997	*Escherichia coli*	271	33
ORF892	873812	873360	putative				
ORF893	874028	874438	putative				
ORF894	874778	875386	putative				
ORF895	875774	876382	putative				
ORF896	877872	877000	secretion system apparatus, SsaT	X99944	*Salmonella typhimurium*	174	34
ORF897	878172	877876	yscS	L25667	*Yersinia pseudotuberculosis*	172	44
ORF898	879098	878172	pathogenicity protein	M64094	*Xanthomonas campestris*	464	46
ORF899	878883	879161	putative				
ORF900	879842	879105	PscL	U56077	*Pseudomonas aeruginosa*	141	34
ORF901	880885	880052	putative				
ORF902	881863	880889	HrcJ	U56662	*Erwinia amylovora*	236	43
ORF903	882904	881948	ORF YOR196c	Z75104	*Saccharomyces cerevisiae*	685	44
ORF904	883794	882901	dihydrolipoamide dehydrogenase	L31844	*Clostridium magnum*	578	38
ORF905	884296	883661	YqiV	D84432	*Bacillus subtilis*	437	44
ORF906	884996	884508	putative				
ORF907	888777	885166	helicase of the snf2/rad54 family	D90916	*Synechocystis sp.*	824	43
ORF908	890172	888940	sodium-coupled branched-chain amino acid carrier	D49784	*Clostridium perfringens*	230	35
ORF909	891164	890325	putative Fmu protein	Y13937	*Bacillus subtilis*	220	41
ORF910	891463	891116	putative				
ORF911	893278	891968	DD-carboxypeptidase	M85047	*Bacillus subtilis*	302	39

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF912	893356	893808	putative				
ORF913	893909	893643	putative				
ORF914	894276	893821	hypothetical protein	D90908	*Synechocystis sp.*	155	39
ORF915	894778	894248	putative				
ORF916	895892	895050	putative				
ORF917	895951	896829	putative				
ORF918	900783	897064	DNA polymerase III alpha-subunit (dnaE)	AE000646	*Helicobacter pylori*	1974	43
ORF919	902032	900791	UhpC protein	M17102	*Escherichia coli*	1117	52
ORF920	902659	903876	histidine--tRNA ligase	Z17214	*Streptococcus equisimilis*	686	47
ORF921	903731	903471	putative				
ORF922	903860	905605	aspartyl-tRNA synthetase	D90910	*Synechocystis sp.*	1339	51
ORF923	905725	906474	mip-like protein	X66126	*Chlamydia trachomatis*	1196	98
ORF924	906493	906945	spoU	L40369	*Chlamydia trachomatis*	607	100
ORF925	907306	907001	trxA	L39892	*Chlamydia psittaci*	380	76
ORF926	908101	908742	putative				
ORF927	908721	909194	hypothetical protein	D90914	*Synechocystis sp.*	150	37
ORF928	909198	909584	DNA polymerase III	Z48003	*Staphylococcus aureus*	181	40
ORF929	909583	909951	putative				
ORF930	910081	910569	VdlD	U94318	*Helicobacter pylori*	197	43
ORF931	910615	910944	putative				
ORF932	910948	912261	acid-inducible gene	L13845	*Sinorhizobium meliloti*	145	50
ORF933	912399	912629	putative				
ORF934	912595	913218	UDP-3-O-acyl-GlcNAc deacetylase	U67855	*Pseudomonas aeruginosa*	309	39
ORF935	913203	913676	(3R)-hydroxymyristol acyl carrier protein dehydrase	D90910	*Synechocystis sp.*	302	59

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF936	913691	914485	UDP-N-acetylglucosamine acyltransferase	L22690	*Rickettsia rickettsii*	503	38
ORF937	914516	915136	methionyl-tRNA formyltransferase	X63666	*Escherichia coli*	407	42
ORF938	915144	915467	putative				
ORF939	915629	916633	putative				
ORF940	916051	916539	putative				
ORF941	916965	917627	ribosomal protein L3 (rpL3)	U32761	*Haemophilus influenzae*	470	48
ORF942	917612	918304	50S ribosomal protein L4	AB000111	*Synechococcus sp.*	210	43
ORF943	918323	918655	ribosomal protein L23	Z21677	*Thermotoga maritima*	116	47
ORF944	918682	919533	rpl2	M74770	*Mycoplasma-like organism*	800	48
ORF945	919542	919829	Mycoplasma pneumoniae, ribosomal protein S19; similar to GenBank Accession Number S36895, from M. bovis	AE000061	*Mycoplasma pneumoniae*	315	68
ORF946	919723	920157	ribosomal protein L22	Z21677	*Thermotoga maritima*	240	49
ORF947	920184	920840	ribosomal protein S3 (rpS3)	U32761	*Haemophilus influenzae*	605	57
ORF948	920866	921294	ribosomal protein L16	Z21677	*Thermotoga maritima*	434	62
ORF949	921272	921514	ribosomal protein CtrL29e	M80325	*Chlamydia trachomatis*	343	99
ORF950	921510	921758	ribosomal protein S17e	M80325	*Chlamydia trachomatis*	419	100
ORF951	921778	922143	ribosomal protein CtrL14e	M80325	*Chlamydia trachomatis*	618	100
ORF952	922159	922491	ribosomal protein CtrL24e	M80325	*Chlamydia trachomatis*	568	100
ORF953	922496	923035	ribosomal protein CtrL5e	M80325	*Chlamydia trachomatis*	793	99

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF954	923160	923453	ribosomal protein CtrS8e	M80325	*Chlamydia trachomatis*	487	98
ORF955	923484	924032	ribosomal protein L6	M60652	*Chlamydia trachomatis*	927	100
ORF956	924048	924425	ribosomal protein CtrL18e	M80325	*Chlamydia trachomatis*	605	99
ORF957	924443	924937	ribosomal protein CtrS5e	M80325	*Chlamydia trachomatis*	814	99
ORF958	924933	925364	ribosomal protein CtrL15e	M80325	*Chlamydia trachomatis*	740	99
ORF959	925390	926760	homolog	L25077	*Chlamydia trachomatis*	2254	99
ORF960	926819	927184	ribosomal protein S13	L33834	*Chlamydia trachomatis*	604	100
ORF961	927209	927604	ribosomal protein S11	L33834	*Chlamydia trachomatis*	646	98
ORF962	927577	928155	RNA polymerase alpha-subunit	L33834	*Chlamydia trachomatis*	847	97
ORF963	928100	928759	RNA polymerase alpha-subunit	L33834	*Chlamydia trachomatis*	1040	98
ORF964	929222	930244	glyceraldehyde-3-phosphate dehydrogenase	U83198	*Chlamydia trachomatis*	1735	99
ORF965	930222	930656	putative				
ORF966	930608	931078	putative				
ORF967	931367	931666	putative				
ORF968	931549	931959	putative				
ORF969	932070	932579	crossover junction endodeoxyribonuclease (ruvC)	U32717	*Haemophilus influenzae*	250	41
ORF970	932602	933201	Holliday junction DNA helicase (ruvA)	U32716	*Haemophilus influenzae*	258	38
ORF971	933319	933621	nucleoside diphosphate kinase (ndk)	AE000540	*Helicobacter pylori*	264	60

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF972	933522	933785	nucleoside 5'-diphosphate phosphotransferase (EC 2.7.4.6)	J05207	*Myxococcus xanthus*	186	64
ORF973	934546	933848	hypothetical protein (GB:U14003_297)	U39706	*Mycoplasma genitalium*	156	36
ORF974	936377	934539	homologous to E.coli gidA	X62540	*Pseudomonas putida*	1562	51
ORF975	938081	936666	replicative DNA helicase	D26185	*Bacillus subtilis*	848	41
ORF976	938538	939098	phosphatidylglycerophosphate synthase (pgsA)	AE000610	*Helicobacter pylori*	120	33
ORF977	939329	940933	adenine nucleotide translocase	Z49227	*Arabidopsis thaliana*	668	40
ORF978	941031	942068	putative protease	AF008220	*Bacillus subtilis*	265	36
ORF979	942082	944685	DNA polymerase	D12982	*Bacillus caldotenax*	1334	42
ORF980	944634	945287	T05G5.5	Z27079	*Caenorhabditis elegans*	198	32
ORF981	945287	946294	'The first ATG in the open reading frame was chosen as the initiation codon.'	L27278	*Pseudomonas fluorescens*	882	68
ORF982	946293	946676	'The first GTG in the open reading frame was chosen as the initiation codon.'	L27276	*Deinococcus radiodurans*	417	65
ORF983	947105	948454	ADPglucose pyrophosphorylase	M31616	*Oryza sativa*	755	44
ORF984	948522	949277	putative				
ORF985	949277	949594	YlbH protein	Z98682	*Bacillus subtilis*	223	41
ORF986	949849	950676	putative				
ORF987	950680	951330	ferrochelatase	M59288	*Mus musculus*	260	42
ORF988	951281	951643	ferrochelatase	D26106	*Cucumis sativus*	178	47
ORF989	951788	952798	putative				
ORF990	953581	954264	putative				
ORF991	954426	955157	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF992	955754	957940	orf4 gene product	X93084	*Methanosarcina barkeri*	130	41
ORF993	957837	959312	OppB gene product	X56347	*Bacillus subtilis*	327	38
ORF994	959299	961050	dipeptide ABC transporter, permease protein (dppC)	AE000548	*Helicobacter pylori*	263	39
ORF995	961562	961053	methylated DNA protein cysteine methyltransferase	U67593	*Methanococcus jannaschii*	109	39
ORF996	962575	961487	putative				
ORF997	961979	961584	putative				
ORF998	964914	962545	phenylalanyl-tRNA synthetase beta subunit	Z75208	*Bacillus subtilis*	775	37
ORF999	964941	965708	putative				
ORF1000	967023	966193	unknown	Z48008	*Saccharomyces cerevisiae*	492	44
ORF1001	967444	968061	putative				
ORF1002	968903	968064	putative				
ORF1003	970685	969528	transcriptional activator of pilA	Z12154	*Pseudomonas aeruginosa*	849	45
ORF1004	971806	971024	sensor protein	L39904	*Myxococcus xanthus*	147	30
ORF1005	973053	972388	putative				
ORF1006	974546	973746	unknown	D64126	*Bacillus subtilis*	500	50
ORF1007	975223	974558	unknown	D26185	*Bacillus subtilis*	141	44
ORF1008	976193	975207	hypothetical protein in htrA dapD intergenic region	AE000126	*Escherichia coli*	142	42
ORF1009	976520	976254	unknown	Z49939	*Saccharomyces cerevisiae*	183	39
ORF1010	976588	976899	putative				
ORF1011	976886	977635	peptide release factor 2	X99401	*Bacillus firmus*	534	44
ORF1012	977661	977933	release factor 2	AF013188	*Bacillus subtilis*	187	52
ORF1013	977918	978433	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1014	978619	978984	spore coat protein CotRC	D50551	*Bacillus subtilis*	355	52
ORF1015	978933	979331	hypothetical	U32717	*Haemophilus influenzae*	199	40
ORF1016	981197	979389	putative				
ORF1017	979711	980112	putative				
ORF1018	982116	981148	putative				
ORF1019	982321	983598	UDP-N-acetylglucosamine enolpyruvyl transferase (murZ)	U32788	*Haemophilus influenzae*	593	38
ORF1020	984488	983862	arginyl-tRNA-synthetase	D64006	*Synechocystis sp.*	347	44
ORF1021	985381	984371	arginyl-tRNA-synthetase	D64006	*Synechocystis sp.*	782	58
ORF1022	986103	985399	hypothetical protein	D90915	*Synechocystis sp.*	224	35
ORF1023	986693	986046	No definition line found	U00021	*Mycobacterium leprae*	286	50
ORF1024	987607	986693	o298; This 298 aa ORF is 33 pct identical (24 gaps) to 248 residues of an approx. 256 aa protein CDSA_ECOLI SW: P06466	AE000238	*Escherichia coli*	132	46
ORF1025	988119	987616	conserved hypothetical protein	AE000627	*Helicobacter pylori*	343	49
ORF1026	988253	987936	hypothetical protein (HI0920)	U67577	*Methanococcus jannaschii*	110	38
ORF1027	988831	989163	putative				
ORF1028	989693	993442	protein-export membrane protein SecD	D64000	*Synechocystis sp.*	447	38
ORF1029	993408	993785	protein-export membrane protein	U83136	*Rhodobacter sphaeroides*	240	43
ORF1030	993835	993416	putative				
ORF1031	993882	994262	putative				
ORF1032	994226	995656	RecJ recombination protein	U41759	*Chlamydia psittaci*	880	66
ORF1033	996036	996611	unknown	U41759	*Chlamydia psittaci*	533	75
ORF1034	996885	998267	glutamyl-tRNA synthetase homolog	U41759	*Chlamydia psittaci*	2018	83

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1035	998962	999225	9-kDa cysteine-rich outer membrane protein	M35148	*Chlamydia trachomatis*	504	100
ORF1036	999375	1001033	outer membrane protein 2	M23001	*Chlamydia trachomatis*	2857	100
ORF1037	1001211	1001516	15-kDa serine-rich outer membrane protein	M35148	*Chlamydia trachomatis*	276	94
ORF1038	1001392	1001664	15-kDa serine-rich outer membrane protein	M35148	*Chlamydia trachomatis*	438	97
ORF1039	1003721	1001823	ORF of prc gene (alt.)	D00674	*Escherichia coli*	486	42
ORF1040	1004459	1004845	StrA	M86701	*Haemophilus influenzae*	454	70
ORF1041	1004990	1005382	ribosomal protein S7	Z11567	*Chlamydia trachomatis*	662	99
ORF1042	1005391	1007496	translation elongation factor EF-G (fusA)	AE000625	*Helicobacter pylori*	2147	62
ORF1043	1007486	1007821	ribosomal protein S10	Z21676	*Spirulina platensis*	350	68
ORF1044	1007802	1008698	NADPH-sulfite reducatase flavoprotein component	M23008	*Escherichia coli*	113	48
ORF1045	1009426	1009121	unknown	Z92774	*Mycobacterium tuberculosis*	102	42
ORF1046	1010534	1012054	serine hydroxymethyltransferase	Z38002	*Bacillus subtilis*	1021	55
ORF1047	1012397	1011942	putative				
ORF1048	1012042	1012635	ATP-dependent Clp protease proteolytic subunit	D90915	*Synechocystis sp.*	365	44
ORF1049	1012593	1012862	putative				
ORF1050	1012811	1013440	diaminopimelate epimerase (dapF)	U32759	*Haemophilus influenzae*	108	40
ORF1051	1013456	1014055	putative				
ORF1052	1013977	1014489	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1053	1015224	1014529	hypothetical 28.1 kD protein in udp-rfaH intergenic region	AE000459	*Escherichia coli*	263	38
ORF1054	1016002	1015145	putative				
ORF1055	1017120	1015939	conserved hypothetical protein	AE000579	*Helicobacter pylori*	428	42
ORF1056	1017766	1017245	putative				
ORF1057	1018911	1017916	putative				
ORF1058	1019191	1018580	putative				
ORF1059	1020199	1019831	hemolysin	AE000647	*Helicobacter pylori*	164	33
ORF1060	1021007	1020114	unknown	Z95208	*Mycobacterium tuberculosis*	201	36
ORF1061	1021569	1021075	putative				
ORF1062	1022411	1022097	putative				
ORF1063	1023344	1023667	50S ribosomal subunit protein L21	U18997	*Escherichia coli*	218	43
ORF1064	1023701	1023949	50S ribosomal protein L27	U38804	*Porphyra purpurea*	251	64
ORF1065	1023976	1024776	ORF_f390	U18997	*Escherichia coli*	603	51
ORF1066	1024704	1025045	GTP-binding protein (obg)	U32769	*Haemophilus influenzae*	161	37
ORF1067	1025881	1024967	hypothetical protein	D90903	*Synechocystis sp.*	439	35
ORF1068	1026546	1025839	YcdI	AB000617	*Bacillus subtilis*	312	40
ORF1069	1027379	1026546	adhesion protein	D90903	*Synechocystis sp.*	354	35
ORF1070	1030604	1027929	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	95	49
ORF1071	1033252	1030508	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	75	36
ORF1072	1031733	1032086	putative				
ORF1073	1037037	1033456	putative 98 kDa outer membrane protein	U72499	*Chlamydia psittaci*	160	46
ORF1074	1035674	1035910	putative				

ADEPT SEQ LISTING

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1075	1036175	1036507	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1076	68(com)	1036967	putative				
ORF1077	16591	16989	GutQ/KpsF Family Sugar-P Isomerase	AE001313	*Chlamydia trachomatis*	658	97
ORF1078	31779	31408	putative				
ORF1079	56502	56834	hypothetical protein	AE001309	*Chlamydia trachomatis*	284	95
ORF1080	56686	56913	hypothetical protein	AE001309	*Chlamydia trachomatis*	303	94
ORF1081	64748	65074	hypothetical protein (possible 357R?)	AE001309	*Chlamydia trachomatis*	501	100
ORF1082	73482	73195	Predicted OMP [leader (19) peptide]	AE001308	*Chlamydia trachomatis*	476	100
ORF1083	78482	78736	putative				
ORF1084	79803	79411	hypothetical protein	AE001307	*Chlamydia trachomatis*	583	98
ORF1085	82333	81959	Lon ATP-dependent protease	AE001307	*Chlamydia trachomatis*	607	99
ORF1086	87313	86999	hypothetical protein	AE001307	*Chlamydia trachomatis*	534	100
ORF1087	109929	109456	hypothetical protein	AE001305	*Chlamydia trachomatis*	529	98
ORF1088	111599	111351	putative				
ORF1089	112069	111734	putative				
ORF1090	112666	112911	hypothetical protein	AE001305	*Chlamydia trachomatis*	395	94
ORF1091	114017	113715	putative				
ORF1092	120757	120464	putative				
ORF1093	125133	125522	predied ferredoxin	AE001303	*Chlamydia trachomatis*	631	97
ORF1094	131888	131604	putative				
ORF1095	144164	144427	putative				
ORF1096	150698	150369	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1097	164385	163948	NADH (Ubiquinone) Dehydrogenase	AE001300	*Chlamydia trachomatis*	755	100
ORF1098	165690	166115	hypothetical protein	AE001300	*Chlamydia trachomatis*	724	99
ORF1099	168742	168425	hypothetical protein	AE001300	*Chlamydia trachomatis*	356	96
ORF1100	170509	170793	hypothetical protein	AE001300	*Chlamydia trachomatis*	489	100
ORF1101	177145	177474	AcCoA Carboxylase/Transferase Alpha	AE001299	*Chlamydia trachomatis*	518	99
ORF1102	188295	188023	hypothetical protein	AE001298	*Chlamydia trachomatis*	451	100
ORF1103	188791	188330	hypothetical protein	AE001298	*Chlamydia trachomatis*	733	97
ORF1104	190629	190336	putative				
ORF1105	197313	197083	putative				
ORF1106	210914	211384	putative				
ORF1107	235160	234852	Glutamate Aminomutase	AE001295	*Chlamydia trachomatis*	507	97
ORF1108	237227	236913	putative				
ORF1109	249733	249446	Oligopeptide Permease	AE001293	*Chlamydia trachomatis*	512	100
ORF1110	253493	253158	hypothetical protein	AE001293	*Chlamydia trachomatis*	318	63
ORF1111	253701	254789	hypothetical protein	AE001293	*Chlamydia trachomatis*	1860	99
ORF1112	271633	271932	hypothetical protein	AE001291	*Chlamydia trachomatis*	512	100
ORF1113	275666	276070	Disulfide bond Oxidoreductase	AE001291	*Chlamydia trachomatis*	700	99
ORF1114	277931	278218	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1115	282741	282481	hypothetical protein	AE001290	*Chlamydia trachomatis*	422	99
ORF1116	293178	293489	Phospholipase D Endonuclease Superfamily	AE001289	*Chlamydia trachomatis*	433	95
ORF1117	303155	303469	putative				
ORF1118	309297	308965	hypothetical protein	AE001287	*Chlamydia trachomatis*	422	95
ORF1119	312219	312536	putative				
ORF1120	312853	312602	hypothetical protein	AE001287	*Chlamydia trachomatis*	338	99
ORF1121	313167	312772	hypothetical protein	AE001287	*Chlamydia trachomatis*	616	98
ORF1122	320224	320598	hypothetical protein	AE001286	*Chlamydia trachomatis*	628	98
ORF1123	340249	340503	Oligopeptidase	AE001285	*Chlamydia trachomatis*	444	100
ORF1124	352839	353324	hypothetical protein	AE001284	*Chlamydia trachomatis*	751	98
ORF1125	373475	373699	Phopholipase D Superfamily [leader (33) peptide}	AE001282	*Chlamydia trachomatis*	378	100
ORF1126	377316	377756	hypothetical protein	AE001282	*Chlamydia trachomatis*	764	99
ORF1127	379268	379657	hypothetical protein	AE001282	*Chlamydia trachomatis*	535	100
ORF1128	395098	394823	putative				
ORF1129	401594	401142	Flagellar Secretion Protein	AE001280	*Chlamydia trachomatis*	698	100
ORF1130	410045	410539	hypothetical protein	AE001279	*Chlamydia trachomatis*	767	100
ORF1131	411425	411658	Coproporphyrinogen III Oxidase	AE001279	*Chlamydia trachomatis*	399	99
ORF1132	414937	414416	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1133	422889	423212	Glycogen Hydrolase (debranching)	AE001278	*Chlamydia trachomatis*	206	100
ORF1134	427842	428183	hypothetical protein	AE001278	*Chlamydia trachomatis*	610	100
ORF1135	428732	429451	hypothetical protein	AE001278	*Chlamydia trachomatis*	1010	98
ORF1136	442557	442799	hypothetical protein	AE001277	*Chlamydia trachomatis*	649	94
ORF1137	443628	444041	L31 Ribosomal Protein	AE001277	*Chlamydia trachomatis*	538	96
ORF1138	443678	443166	putative				
ORF1139	445901	446155	putative				
ORF1140	467981	468262	putative				
ORF1141	471869	472108	Putative Outer Membrane Protein I	AE001361	*Chlamydia trachomatis*	370	100
ORF1142	488032	488337	Membrane Thiol Protease	AE001360	*Chlamydia trachomatis*	483	96
ORF1143	497179	497694	Low Calcium Response Protein H	AE001359	*Chlamydia trachomatis*	864	95
ORF1144	500474	500202	putative				
ORF1145	508968	509561	ABC transporter permease	AE001358	*Chlamydia trachomatis*	964	100
ORF1146	510845	511264	hypothetical protein	AE001358	*Chlamydia trachomatis*	360	89
ORF1147	526525	526848	hypothetical protein	AE001356	*Chlamydia trachomatis*	242	81
ORF1148	531318	531863	hypothetical protein	AE001356	*Chlamydia trachomatis*	127	100
ORF1149	556826	557224	hypothetical protein	AE001354	*Chlamydia trachomatis*	683	99
ORF1150	564971	564537	hypothetical protein	AE001353	*Chlamydia trachomatis*	534	100

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1151	566963	567232	Glycerol-3-P Acyltransferase	AE001353	*Chlamydia trachomatis*	220	53
ORF1152	570351	570890	Insulinase family/Protease III	AE001353	*Chlamydia trachomatis*	925	100
ORF1153	571072	571332	hypothetical protein	AE001353	*Chlamydia trachomatis*	441	99
ORF1154	576025	575801	General Stress Protein	AE001352	*Chlamydia trachomatis*	273	97
ORF1155	590363	590650	hypothetical protein	AE001351	*Chlamydia trachomatis*	442	100
ORF1156	597868	598593	hypothetical protein	AE001350	*Chlamydia trachomatis*	1176	98
ORF1157	606889	606626	putative				
ORF1158	608031	607786	hydrolase/phosphatase homolog	AE001349	*Chlamydia trachomatis*	434	99
ORF1159	610110	610391	putative				
ORF1160	632703	633353	putative				
ORF1161	637213	637482	putative				
ORF1162	650517	649924	putative				
ORF1163	652317	652562	Phenolhydrolase/NADH ubiquinone oxidoreductase	AE001345	*Chlamydia trachomatis*	324	99
ORF1164	654753	655325	putative				
ORF1165	661118	660810	putative				
ORF1166	677596	677057	hypothetical protein	AE001343	*Chlamydia trachomatis*	864	98
ORF1167	679528	679253	putative				
ORF1168	732536	732210	putative				
ORF1169	742069	742383	putative				
ORF1170	759318	758782	(Pseudouridine Synthase)	AE001336	*Chlamydia trachomatis*	909	98
ORF1171	760282	760521	putative				
ORF1172	771313	770894	hypothetical protein	AE001335	*Chlamydia trachomatis*	661	96

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1173	772115	772408	hypothetical protein	AE001335	*Chlamydia trachomatis*	520	99
ORF1174	788137	788457	putative				
ORF1175	816302	815967	putative				
ORF1176	846606	846914	putative				
ORF1177	867803	868054	putative				
ORF1178	875386	875658	hypothetical protein	AE001327	*Chlamydia trachomatis*	268	86
ORF1179	876445	876915	hypothetical protein	AE001327	*Chlamydia trachomatis*	747	99
ORF1180	884548	884312	putative				
ORF1181	891859	891467	hypothetical protein	AE001326	*Chlamydia trachomatis*	551	95
ORF1182	900770	900417	putative				
ORF1183	902553	902269	putative				
ORF1184	908046	907783	putative				
ORF1185	912313	912567	Myristoyl GlcNac Deacetylase	AE001324	*Chlamydia trachomatis*	195	97
ORF1186	935451	935741	putative				
ORF1187	946961	946692	hypothetical protein	AE001322	*Chlamydia trachomatis*	410	99
ORF1188	953193	952783	hypothetical protein	AE001322	*Chlamydia trachomatis*	593	100
ORF1189	966199	965873	hypothetical protein	AE001321	*Chlamydia trachomatis*	542	98
ORF1190	969298	968765	putative				
ORF1191	971009	970731	2-Component Sensor	AE001320	*Chlamydia trachomatis*	467	97
ORF1192	972162	972404	putative				
ORF1193	973119	973508	Phosphoglycolate Phosphatase	AE001320	*Chlamydia trachomatis*	647	98
ORF1194	998649	998404	putative				

ORF	begin	stop	Homology	ID	*Species*	Score	I%
ORF1195	1004280	1003882	hypothetical protein	AE001317	*Chlamydia trachomatis*	571	99
ORF1196	1010200	1009532	hypothetical protein	AE001317	*Chlamydia trachomatis*	1132	99
ORF1197	1029174	1029482	putative				

TABLE 2

SEQ ID NO	begin	stop	preferred start
2	501	208	501
3	3276	505	3153
4	5068	3242	5062
5	6400	5126	6400
6	7977	6619	7977
7	8582	8082	8582
8	8995	8591	8995
9	9440	8979	9440
10	9828	10430	9828
11	10367	11254	10430
12	11245	11916	11245
13	12068	13324	12068
14	13532	14413	13538
15	14807	15019	14807
16	14932	15969	14977
17	15995	16501	16004
18	16467	16138	16377
19	18190	17417	18178
20	20521	18437	20518
21	22202	20814	22166
22	22602	22153	22509
23	22804	22478	22795
24	23183	22824	23180
25	23394	23110	23394
26	24569	23394	24569
27	26383	24641	26383
28	26640	27710	26640
29	28780	27725	28729
30	29957	28740	29957
31	30721	30032	30628
32	31281	30520	31254
33	31436	31780	31436

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SEQ ID NO	begin	stop	preferred start
34	33356	31800	33344
35	33901	33314	33874
36	34116	35027	34116
37	34988	35359	35027
38	35167	35919	35377
39	35923	36996	36031
40	37810	37013	37765
41	38207	39085	38252
42	39151	39927	39157
43	39923	40756	39959
44	40760	42007	40772
45	42175	43116	42229
46	42999	43802	43128
47	44211	45227	44217
48	46072	45275	46066
49	46340	45975	46331
50	46895	46506	46865
51	47955	46882	47955
52	48585	48178	48558
53	50072	48630	50012
54	50710	50099	50692
55	52439	50925	52430
56	53484	52348	53478
57	54536	53466	54536
58	55086	54595	55104
59	56350	55031	56350
60	55659	56084	55722
61	56847	58235	56931
62	58423	59181	58423
63	59185	60195	59194
64	60188	61483	60191
65	61496	62353	61496
66	62500	63141	62518
67	63396	63983	63396

SEQ ID NO	begin	stop	preferred start
68	64628	64071	64580
69	64285	64656	64285
70	64944	64609	64938
71	65347	67269	65347
72	67656	68873	67815
73	68877	69233	68892
74	69212	69721	69323
75	69958	70455	69970
76	70701	71006	70725
77	73191	71086	73185
78	74900	73497	74891
79	75463	74876	75463
80	77124	75502	77124
81	77000	77299	77012
82	78095	77145	78095
83	79065	78154	79065
84	81971	79878	81965
85	82639	83271	82642
86	83792	84850	83921
87	84876	86921	84888
88	88650	87313	88383
89	87440	87805	87458
90	88400	88747	88409
91	88717	89265	88729
92	89355	89732	89355
93	89735	91447	89735
94	91749	91435	91749
95	92392	91745	92323
96	93138	92344	92874
97	94134	93361	93945
98	94637	94071	94577
99	98299	94628	98113
100	98715	98113	98715
101	100228	98741	100195

SEQ ID NO	begin	stop	preferred start
102	101347	100337	101323
103	102210	101323	102210
104	102485	102210	102479
105	104315	102726	104315
106	105075	104254	105075
107	105259	105894	105271
108	107429	108460	107486
109	108665	108955	108683
110	109459	109013	109456
111	110366	109704	110363
112	111330	112520	111330
113	112915	113463	112918
114	113566	113994	113566
115	114020	114604	114020
116	114720	115253	114807
117	115362	115676	115380
118	116022	119795	116040
119	119823	124010	119823
120	124065	124988	124065
121	124873	125106	124873
122	126261	125536	126243
123	126328	126930	126331
124	127138	127785	127147
125	127924	129714	127942
126	129720	131033	129720
127	131018	131629	131021
128	131834	133156	131852
129	133075	133584	133096
130	133625	133999	133628
131	133861	134508	133948
132	134638	137454	134638
133	137442	140276	137472
134	140733	140335	140727
135	141799	141077	141799

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SEQ ID NO	begin	stop	preferred start
136	143240	141780	143240
137	143829	143128	143820
138	143923	144393	143923
139	144548	146326	144548
140	146413	147078	146425
141	147140	148075	147152
142	148115	148549	148115
143	148524	149027	148524
144	149000	149305	149033
145	149187	149708	149187
146	149712	150911	149769
147	152044	151004	151966
148	152664	151999	152592
149	152900	153352	152924
150	153389	153997	153425
151	155276	153984	155228
152	156544	155231	156544
153	156806	157525	156809
154	157489	158955	157534
155	159104	159961	159104
156	159916	161220	159916
157	161183	161593	161228
158	162354	161623	162354
159	163013	162363	163013
160	163941	162994	163941
161	165505	164474	165505
162	166686	166093	166686
163	168171	166729	168171
164	169249	168848	169189
165	169586	170431	169607
166	170780	171334	170783
167	171333	172376	171390
168	172309	172722	172309
169	173048	174496	173048

SEQ ID NO	begin	stop	preferred start
170	174399	174968	174399
171	175267	175710	175267
172	175714	177009	175735
173	177423	178115	177468
174	178084	180021	178084
175	180704	180048	180635
176	181398	180631	181398
177	182594	181398	182594
178	182895	183656	182895
179	183665	184786	183665
180	186007	184796	186007
181	186848	186000	186791
182	187270	186749	187240
183	187426	187809	187429
184	189481	188798	189442
185	189693	190352	189693
186	190235	190510	190280
187	190785	191786	190824
188	191790	192464	191811
189	192392	193183	192500
190	193254	194630	193263
191	195046	194690	195037
192	195184	197031	195193
193	197018	197635	197024
194	197762	198208	197669
195	198963	197668	198954
196	199957	198962	199945
197	200327	199941	200306
198	200685	200266	200598
199	200962	200585	200962
200	201169	202377	201184
201	203441	202380	203441
202	203998	203471	203989
203	206449	204059	206434

SEQ ID NO	begin	stop	preferred start
204	207425	206811	207410
205	207506	208528	207506
206	208545	209471	208545
207	209471	210214	209471
208	210586	210816	210586
209	211332	210883	211293
210	212978	211374	212972
211	214134	212875	214134
212	214710	214168	214701
213	215143	214754	215128
214	216705	215236	216705
215	217917	216892	217911
216	217088	217441	217202
217	218364	218702	218364
218	218695	219009	218785
219	219179	219748	219260
220	219891	220430	219912
221	220499	221074	220505
222	221137	221541	221176
223	221601	222092	221616
224	222472	223290	222487
225	223423	223818	223423
226	224278	225171	224278
227	225749	225174	225749
228	225334	225549	225328
229	226654	225749	226654
230	227299	226769	227170
231	227646	227161	227646
232	228457	227750	228439
233	230001	228607	229854
234	231074	230151	231062
235	231348	233006	231366
236	233059	233829	233059
237	233801	234265	233801

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SEQ ID NO	begin	stop	preferred start
238	234282	234854	234288
239	236300	235227	236300
240	236314	238209	236314
241	238164	238769	238185
242	238769	240061	238769
243	242022	240313	242022
244	242846	241941	242846
245	244480	242798	244456
246	245897	244479	245891
247	246877	245924	246829
248	247731	246985	247725
249	248585	247743	248573
250	249420	248569	249411
251	250383	249766	250383
252	251186	250545	251174
253	252111	251095	252099
254	253088	252066	253088
255	255153	256718	255153
256	256762	257844	256774
257	257911	258690	257962
258	258780	259187	258840
259	259193	261604	259193
260	261622	264129	261622
261	264125	264742	264134
262	264741	265628	264759
263	266416	265631	266416
264	266938	266426	267946
265	267961	266942	267946
266	268320	268066	268299
267	268510	268205	268510
268	270116	268500	270116
269	270892	270095	270856
270	271191	271613	271224
271	272219	272932	272243

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SEQ ID NO	begin	stop	preferred start
272	272884	273588	273079
273	274816	273596	274807
274	274821	275666	274953
275	277689	276103	277689
276	278268	278816	278298
277	279771	279013	279870
278	280777	279767	280762
279	281603	281295	281576
280	282104	281787	282086
281	284335	282794	284320
282	284460	284795	284550
283	284817	285674	284844
284	285637	286137	285670
285	286357	286677	286399
286	286681	287898	286852
287	288127	289227	288358
288	289744	290679	289744
289	290828	291535	291206
290	291514	292230	291514
291	292326	293048	292350
292	293330	294853	293525
293	295684	295010	295684
294	296336	295692	296294
295	297238	296243	297199
296	297791	298735	297791
297	298905	300458	298920
298	302152	300527	302131
299	304917	302071	304872
300	306157	304973	306142
301	306494	306111	306461
302	306963	306436	306963
303	308773	306977	308758
304	309881	309276	309869
305	310720	309872	310711

SEQ ID NO	begin	stop	preferred start
306	311570	310716	311570
307	312451	311972	312439
308	313435	314364	313462
309	314340	314738	314409
310	315526	314741	315445
311	316507	315665	316507
312	317284	316529	317284
313	317592	317338	317592
314	318470	317499	318416
315	317599	317874	317599
316	318947	318477	318887
317	319342	320142	319342
318	320544	321497	320682
319	321485	321937	321497
320	321901	322362	321943
321	322301	323140	322325
322	323144	324913	323177
323	325621	324977	325621
324	326268	325621	326262
325	326469	327203	326469
326	327281	328150	327302
327	328605	328204	328602
328	329066	328734	329066
329	329663	329292	329648
330	330666	329608	330663
331	331161	330670	331161
332	331731	331177	331731
333	332404	331721	332404
334	332779	333021	332779
335	333005	333589	333149
336	334357	333806	334321
337	334089	334361	334089
338	335142	334729	335124
339	335195	335602	335234

SEQ ID NO	begin	stop	preferred start
340	335673	335194	335673
341	336334	335903	336229
342	337378	336338	337378
343	339947	337347	339947
344	340507	341847	340576
345	341783	342022	341786
346	342249	342470	342249
347	342597	343370	342597
348	343361	344032	343379
349	343956	344225	343962
350	344357	345142	344357
351	345934	345161	345934
352	347102	346080	347102
353	347113	347940	347119
354	350164	348146	350113
355	350423	351283	350426
356	352207	351314	352207
357	352727	352245	352703
358	353709	353305	353709
359	354218	353670	354215
360	354721	354140	354721
361	354966	356672	354966
362	356700	357377	356700
363	357326	358093	357500
364	358035	360743	358035
365	360753	361121	360753
366	361162	361884	361162
367	361826	362746	361826
368	363859	362816	363859
369	364116	365195	364116
370	365198	365587	365198
371	365479	367320	365614
372	367341	368603	367341
373	368644	369081	368644

SEQ ID NO	begin	stop	preferred start
374	369088	370251	369088
375	370769	371086	370769
376	371203	372816	371209
377	373119	373529	373152
378	373614	374204	373776
379	374736	374224	374703
380	376391	374703	376382
381	377062	376748	377038
382	377853	378737	377871
383	378626	379048	378710
384	379017	379403	379038
385	380009	379641	379967
386	380187	381470	380187
387	381473	382567	381473
388	382704	383702	382728
389	383945	383655	383921
390	385217	383949	385211
391	385507	385178	385507
392	386845	385706	386842
393	386127	386627	386232
394	387372	386872	387351
395	387823	387338	387823
396	388250	387816	388106
397	389169	388237	389169
398	389955	389173	390087
399	390988	389945	390922
400	391514	391810	391514
401	392410	393996	392413
402	394170	395354	394185
403	395309	395992	395354
404	396538	396059	396529
405	397507	396542	397498
406	398753	397401	398747
407	399688	398909	399667

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SEQ ID NO	begin	stop	preferred start
408	400167	399778	400167
409	401224	400034	401209
410	401776	402021	401776
411	402126	403220	402132
412	403348	405180	403354
413	403788	403276	403785
414	405165	405920	405165
415	407049	405955	407049
416	409773	407056	409764
417	410532	411416	410532
418	411707	413410	411722
419	413433	412606	413334
420	413404	413952	413449
421	413841	415112	413991
422	414379	413978	414220
423	416664	415177	416646
424	417456	416740	417456
425	418053	417721	418044
426	418603	418031	418582
427	419531	418647	419531
428	420190	419672	420190
429	421171	420245	421171
430	421988	421518	421988
431	422486	423043	422492
432	423226	425079	423295
433	426054	425146	426021
434	426985	426245	426967
435	427248	427817	427248
436	429560	429886	429623
437	430360	429857	430360
438	430637	430323	430628
439	430933	431787	430966
440	431658	431987	431688
441	432232	434475	432238

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SEQ ID NO	begin	stop	preferred start
442	436308	434620	436269
443	436574	436272	436571
444	437685	436567	437595
445	438262	437894	438256
446	439127	438285	439031
447	439339	438986	439339
448	439705	439358	439705
449	441042	439699	441042
450	441911	441042	441911
451	442593	441898	442584
452	444505	446388	444505
453	448068	446452	448029
454	449575	447932	449575
455	450546	451076	450576
456	451623	451144	451401
457	452593	451517	452575
458	453195	452632	453174
459	453567	454868	453567
460	455430	454972	455403
461	456047	455367	456047
462	457384	456047	457384
463	457659	458450	457659
464	458508	459632	458511
465	459839	461203	459839
466	461624	461196	461624
467	461887	462621	462151
468	463758	462895	463749
469	464048	464629	464063
470	464721	465848	464760
471	467420	466113	467414
472	468891	467419	468891
473	469280	468906	469226
474	469349	469675	469406
475	471226	469826	471160

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SEQ ID NO	begin	stop	preferred start
476	471624	471106	471609
477	471954	473267	471954
478	473252	473695	473252
479	473982	474527	474051
480	475198	474602	475195
481	476527	475613	476509
482	478640	476517	478640
483	479084	478665	479078
484	479723	479088	479720
485	480012	479668	479898
486	481466	479895	481412
487	481732	481496	481732
488	481864	483429	481870
489	483402	484964	483402
490	484898	487864	484970
491	485725	485222	485593
492	488204	489247	488321
493	488571	488233	488562
494	489440	490456	489473
495	492765	490507	492690
496	492357	492893	492654
497	493744	492737	493723
498	493875	494675	493875
499	494573	494869	494609
500	494835	495365	494955
501	495174	494872	495174
502	495687	496634	495732
503	496295	497176	496523
504	497703	498515	498222
505	498280	499239	498301
506	499215	500732	499254
507	501710	500790	501710
508	502863	501808	502830
509	503675	502692	503645

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SEQ ID NO	begin	stop	preferred start
510	505002	503722	505002
511	505739	506986	505739
512	506999	507439	507011
513	508404	507649	508302
514	508291	508590	508297
515	508915	508478	508915
516	509600	510691	509600
517	511039	511527	511147
518	511547	512185	511547
519	512382	513092	512385
520	514287	513055	514269
521	514789	515244	514792
522	514994	515269	515027
523	515553	515804	515553
524	515808	516422	515820
525	516476	517171	516605
526	517927	517400	517927
527	518096	518380	518114
528	518403	518822	518412
529	518923	519516	518923
530	519577	520497	519730
531	521986	520718	521971
532	522131	521886	522125
533	523495	522143	523483
534	524591	523623	524510
535	524652	525746	524685
536	525731	526078	525752
537	525939	526400	525999
538	526301	526735	526361
539	528323	526851	528284
540	528861	528292	528828
541	529723	529142	529645
542	530166	529624	530166
543	530543	530223	530543

SEQ ID NO	begin	stop	preferred start
544	531378	530737	531363
545	532370	533272	532370
546	533849	533244	533849
547	534672	533944	534615
548	535915	534878	535915
549	539153	535956	539114
550	539731	540519	539731
551	540523	540969	540526
552	540906	541805	541002
553	543255	541825	543222
554	544133	543222	544115
555	544565	544179	544532
556	544762	544487	544747
557	546423	544951	546423
558	547480	546584	547378
559	546789	547382	546900
560	547901	547476	547826
561	548634	547900	548634
562	548692	549459	548704
563	550385	549663	550376
564	551611	550421	551611
565	553041	551797	553041
566	554946	553096	554946
567	556300	554927	556300
568	556524	556904	556524
569	558126	557314	558105
570	557810	558235	557810
571	559215	558310	559215
572	561349	559196	561349
573	562931	561150	562898
574	564083	563121	564083
575	563593	563943	563644
576	565379	566953	565379
577	567079	567966	567274

SEQ ID NO	begin	stop	preferred start
578	568021	570399	568021
579	571269	572021	571284
580	572519	572755	572519
581	573519	572731	573393
582	572879	573427	573077
583	574160	573660	574160
584	574426	574184	574426
585	574781	574446	574781
586	575243	574923	575156
587	575458	575057	575458
588	575849	575469	575735
589	576545	578023	576545
590	578673	578017	578673
591	579012	582104	579012
592	582697	582206	582682
593	583122	582811	583095
594	583514	583182	583484
595	583869	583438	583803
596	584435	583827	584399
597	584967	584299	584967
598	585297	585016	585285
599	585240	586610	585300
600	586484	587758	586505
601	587786	589408	587786
602	589198	589578	589258
603	590061	589630	589971
604	590739	591272	590775
605	592406	592765	592406
606	593145	592849	593127
607	593900	593121	593894
608	594138	595637	594138
609	596122	595640	596053
610	596864	596154	596828
611	597731	597282	597689

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SEQ ID NO	begin	stop	preferred start
612	598524	600809	598551
613	601876	600734	601864
614	603523	601910	603520
615	603794	603531	603794
616	604413	603757	604398
617	604549	605610	604549
618	606619	605582	606619
619	606843	607493	606867
620	609068	608031	608972
621	609652	609296	609652
622	611860	610109	611830
623	611812	612927	611815
624	613597	612938	613444
625	613952	613692	613952
626	614315	615244	614441
627	615396	615683	615396
628	617711	615864	617624
629	618313	617510	618361
630	619338	618361	619338
631	620416	619247	620401
632	619863	620261	619929
633	621184	620420	621154
634	621690	621154	621678
635	622399	621674	622399
636	623466	622414	623421
637	624178	623570	624106
638	624918	624073	624918
639	625346	626665	625367
640	626514	626900	626652
641	626954	627853	626984
642	627822	628124	627873
643	628715	628146	628715
644	628932	629801	628935
645	630406	629804	630298

SEQ ID NO	begin	stop	preferred start
646	630960	630298	630915
647	631799	630915	631799
648	637488	638084	637488
649	638036	640207	638111
650	640221	643472	640236
651	640627	640220	640627
652	643485	644495	643488
653	644471	645430	644471
654	645394	645840	645538
655	645840	647111	645840
656	649676	647109	649616
657	649970	650344	649970
658	650418	651722	650433
659	651686	652171	651770
660	652516	652908	652516
661	652799	653593	652892
662	659884	661851	660136
663	661740	662282	661851
664	662286	663074	662289
665	662951	663730	663074
666	664212	663745	664194
667	665619	664255	665619
668	666083	665727	666056
669	666423	665782	666390
670	666831	668117	667047
671	668121	668375	668139
672	668470	668174	668404
673	669533	668616	669485
674	669892	669485	669892
675	670780	669998	670765
676	671241	670732	671196
677	671182	672447	671260
678	672692	673231	672698
679	673204	674562	673204

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SEQ ID NO	begin	stop	preferred start
680	674612	675232	674612
681	675327	676463	675327
682	677027	676476	677027
683	678422	677700	678422
684	678717	679508	678708
685	679342	680502	679342
686	680579	681280	680654
687	681539	682558	681557
688	682554	683087	682578
689	683164	684465	683164
690	684774	684418	684639
691	684839	686203	684839
692	686197	687204	686203
693	687341	688360	687341
694	688432	688193	688426
695	689616	688432	689601
696	689960	689631	689939
697	690487	689846	690445
698	690717	690463	690717
699	691871	690672	691856
700	693837	692041	693837
701	694934	693837	694934
702	697263	694942	697230
703	698084	697170	697958
704	698392	697979	698380
705	698792	700117	698792
706	700269	700895	700269
707	700912	702165	700990
708	702183	703412	702183
709	703522	705000	703531
710	705011	705604	705062
711	706159	705704	706093
712	706521	706138	706488
713	708103	706496	707932

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SEQ ID NO	begin	stop	preferred start
714	708398	708078	708392
715	708610	708248	708610
716	710278	708872	710203
717	711164	710262	711164
718	711432	712763	711432
719	712767	713438	712773
720	714232	713651	714217
721	714632	714120	714617
722	715592	714834	715739
723	715854	715558	715854
724	716937	715921	716886
725	718357	717149	718357
726	718500	718862	718590
727	719797	718499	719776
728	720273	719782	720147
729	720452	720144	720452
730	720613	721575	720613
731	721559	722356	721571
732	723248	722397	723239
733	724598	723378	724580
734	725763	724576	725760
735	726519	725767	726519
736	726819	726538	726801
737	727493	726753	727466
738	727984	727469	727984
739	728778	728329	728718
740	729346	728759	729334
741	732639	729442	732639
742	733246	734427	733246
743	734814	735659	734814
744	735644	736504	735644
745	736520	737254	736520
746	737254	737787	737254
747	737942	738679	738122

SEQ ID NO	begin	stop	preferred start
748	738838	739740	738862
749	742057	740060	741982
750	742869	742045	742824
751	743378	742824	743348
752	744298	743306	744292
753	744714	744430	744660
754	744985	744611	744931
755	745557	744958	745548
756	746412	745561	746409
757	746772	746416	746697
758	748269	746944	748269
759	748966	748274	748954
760	749426	748965	749411
761	749702	749433	749681
762	750029	749721	750020
763	752307	750007	752307
764	752913	752503	752901
765	754659	753616	754659
766	755000	756814	755000
767	756796	758301	756832
768	758691	758446	758688
769	759787	759338	759787
770	760242	759871	760188
771	760538	760188	760529
772	760966	761772	760966
773	761759	762142	761759
774	762267	762983	762267
775	764465	763335	764312
776	764857	764438	764821
777	766068	764821	765972
778	766643	766065	766643
779	768091	766934	768091
780	768785	768252	768785
781	770092	768791	770062

SEQ ID NO	begin	stop	preferred start
782	770138	770470	770150
783	770661	770185	770631
784	770924	770634	770894
785	772010	771330	772010
786	772390	773391	772390
787	774221	773427	774215
788	776035	774191	776035
789	776663	777706	776894
790	777195	776953	777177
791	779222	777732	779180
792	779321	781552	779360
793	781297	782442	781351
794	782447	785524	782447
795	785532	786002	785697
796	786580	785546	786580
797	787741	786611	787729
798	787620	788021	787782
799	790124	787920	790064
800	790160	790609	790178
801	790634	792016	790634
802	793084	792059	793084
803	793343	794056	793370
804	794046	794957	794079
805	795401	795144	795395
806	795575	796255	795575
807	796278	797015	796311
808	796979	797365	796979
809	797260	797856	797395
810	797772	798086	797805
811	798426	797935	798393
812	798925	798416	798916
813	799301	799927	799301
814	800892	800029	800892
815	801062	802129	801062

Sequence 2 of 2

SEQ ID NO	begin	stop	preferred start
816	802023	802673	802041
817	802851	803246	802920
818	803105	804220	803111
819	804307	805356	804331
820	805290	806282	805356
821	806453	808081	806498
822	808026	809009	808098
823	810461	809079	810437
824	811605	810328	811590
825	811725	812342	811824
826	812329	813522	812398
827	813455	813772	813455
828	813732	814334	813780
829	815213	814314	815207
830	814878	814396	814975
831	815733	815428	815733
832	816116	817456	816170
833	817608	819320	817608
834	819324	819713	819342
835	819704	820402	819713
836	820375	821061	820453
837	821043	821537	821043
838	821646	822239	821667
839	822182	822931	822221
840	824355	823045	824352
841	825894	824359	825891
842	826322	825879	826322
843	826340	827026	826340
844	827014	827250	827014
845	827856	827230	827856
846	828007	829275	828025
847	829355	830953	829358
848	831119	831748	831140
849	832152	831751	832140

Substituted Sheet

SEQ ID NO	begin	stop	preferred start
850	832744	832214	832666
851	833446	832805	833446
852	833802	833368	833742
853	834679	833879	834661
854	835452	834661	835365
855	835778	835371	835775
856	836482	835775	836470
857	836602	837264	836617
858	837209	838699	837209
859	838760	839575	838760
860	839942	840583	839951
861	840445	841713	840451
862	841659	842459	841686
863	842523	843068	842541
864	843495	843031	843447
865	843239	846196	843335
866	844137	843802	844077
867	848043	846217	848022
868	850123	848150	850099
869	851645	850230	851504
870	853696	851669	853672
871	854836	853700	854809
872	855525	854920	855468
873	856240	855437	856240
874	857183	856233	857006
875	859439	857451	859430
876	859946	859587	859916
877	859642	860640	859660
878	861599	860724	861599
879	862053	861580	862038
880	863540	862098	863531
881	863930	863571	863927
882	864697	863996	864688
883	864923	866248	864923

SEQ ID NO	begin	stop	preferred start
884	866303	866605	866336
885	866665	867732	866665
886	867810	869090	867864
887	869094	869357	869094
888	869270	871372	869336
889	871299	872582	871359
890	872429	872860	872555
891	872773	873915	872773
892	873812	873360	873668
893	874028	874438	874067
894	874778	875386	874796
895	875774	876382	875843
896	877872	877000	877866
897	878172	877876	878157
898	879098	878172	879098
899	878883	879161	878886
900	879842	879105	879809
901	880885	880052	880885
902	881863	880889	881863
903	882904	881948	882901
904	883794	882901	883761
905	884296	883661	884296
906	884996	884508	884984
907	888777	885166	888771
908	890172	888940	890172
909	891164	890325	891146
910	891463	891116	891427
911	893278	891968	893278
912	893356	893808	893386
913	893909	893643	893894
914	894276	893821	894276
915	894778	894248	894760
916	895892	895050	895874
917	895951	896829	895963

SEQ ID NO	begin	stop	preferred start
918	900783	897064	900774
919	902032	900791	902158
920	902659	903876	902659
921	903731	903471	903731
922	903860	905605	903860
923	905725	906474	905725
924	906493	906945	906493
925	907306	907001	907306
926	908101	908742	908131
927	908721	909194	908724
928	909198	909584	909201
929	909583	909951	909670
930	910081	910569	910090
931	910615	910944	910636
932	910948	912261	910951
933	912399	912629	912399
934	912595	913218	912595
935	913203	913676	913218
936	913691	914485	913691
937	914516	915136	914522
938	915144	915467	915162
939	915629	916633	915629
940	916051	916539	916159
941	916965	917627	916965
942	917612	918304	917612
943	918323	918655	918323
944	918682	919533	918682
945	919542	919829	919542
946	919723	920157	919723
947	920184	920840	920184
948	920866	921294	920866
949	921272	921514	921272
950	921510	921758	921510
951	921778	922143	921778

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SEQ ID NO	begin	stop	preferred start
952	922159	922491	922159
953	922496	923035	922496
954	923160	923453	923160
955	923484	924032	923484
956	924048	924425	924057
957	924443	924937	924443
958	924933	925364	924933
959	925390	926760	925390
960	926819	927184	926819
961	927209	927604	927209
962	927577	928155	927577
963	928100	928759	928127
964	929222	930244	929243
965	930222	930656	930258
966	930608	931078	930665
967	931367	931666	931406
968	931549	931959	931558
969	932070	932579	932070
970	932602	933201	932602
971	933319	933621	933319
972	933522	933785	933522
973	934546	933848	934546
974	936377	934539	936377
975	938081	936666	938081
976	938538	939098	938595
977	939329	940933	939506
978	941031	942068	941076
979	942082	944685	942082
980	944634	945287	944673
981	945287	946294	945287
982	946293	946676	946368
983	947105	948454	947132
984	948522	949277	948546
985	949277	949594	949277

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SEQ ID NO	begin	stop	preferred start
986	949849	950676	949888
987	950680	951330	950701
988	951281	951643	951290
989	951788	952798	951803
990	953581	954264	953602
991	954426	955157	954429
992	955754	957940	955766
993	957837	959312	957867
994	959299	961050	959317
995	961562	961053	961562
996	962575	961487	962545
997	961979	961584	961979
998	964914	962545	964914
999	964941	965708	964956
1000	967023	966193	966984
1001	967444	968061	967459
1002	968903	968064	968792
1003	970685	969528	970685
1004	971806	971024	971785
1005	973053	972388	973026
1006	974546	973746	974546
1007	975223	974558	975214
1008	976193	975207	976193
1009	976520	976254	976511
1010	976588	976899	976588
1011	976886	977635	976934
1012	977661	977933	977682
1013	977918	978433	977933
1014	978619	978984	978619
1015	978933	979331	978987
1016	981197	979389	981197
1017	979711	980112	979753
1018	982116	981148	982107
1019	982321	983598	982321

SEQ ID NO	begin	stop	preferred start
1020	984488	983862	984296
1021	985381	984371	985381
1022	986103	985399	986046
1023	986693	986046	986693
1024	987607	986693	987607
1025	988119	987616	987942
1026	988253	987936	988247
1027	988831	989163	988834
1028	989693	993442	989693
1029	993408	993785	993408
1030	993835	993416	993754
1031	993882	994262	993906
1032	994226	995656	994259
1033	996036	996611	996036
1034	996885	998267	996885
1035	998962	999225	998962
1036	999375	1001033	999393
1037	1001211	1001516	1001214
1038	1001392	1001664	1001443
1039	1003721	1001823	1003721
1040	1004459	1004845	1004459
1041	1004990	1005382	1004990
1042	1005391	1007496	1005391
1043	1007486	1007821	1007453
1044	1007802	1008698	1007841
1045	1009426	1009121	1009426
1046	1010534	1012054	1010534
1047	1012397	1011942	1012241
1048	1012042	1012635	1012057
1049	1012593	1012862	1012593
1050	1012811	1013440	1012829
1051	1013456	1014055	1013468
1052	1013977	1014489	1013977
1053	1015224	1014529	1015206

SEQ ID NO	begin	stop	preferred start
1054	1016002	1015145	1015963
1055	1017120	1015939	1017120
1056	1017766	1017245	1017658
1057	1018911	1017916	1018893
1058	1019191	1018580	1019110
1059	1020199	1019831	1020196
1060	1021007	1020114	1020992
1061	1021569	1021075	1021557
1062	1022411	1022097	1022402
1063	1023344	1023667	1023344
1064	1023701	1023949	1023701
1065	1023976	1024776	1023976
1066	1024704	1025045	1024704
1067	1025881	1024967	1025845
1068	1026546	1025839	1026546
1069	1027379	1026546	1027373
1070	1030604	1027929	1030328
1071	1033252	1030508	1033249
1072	1031733	1032086	1031823
1073	1037037	1033456	1037016
1074	1035674	1035910	1035674
1075	1036175	1036507	1036268
1076	68(comp)	1036967	38
1077	16591	16989	16597
1078	31779	31408	31764
1079	56502	56834	56520
1080	56686	56913	56686
1081	64748	65074	64790
1082	73482	73195	73482
1083	78482	78736	78506
1084	79803	79411	79773
1085	82333	81959	82333
1086	87313	86999	87523
1087	109929	109456	109716

SEQ ID NO	begin	stop	preferred start
1088	111599	111351	111599
1089	112069	111734	111988
1090	112666	112911	112666
1091	114017	113715	113978
1092	120757	120464	120757
1093	125133	125522	125133
1094	131888	131604	131837
1095	144164	144427	144191
1096	150698	150369	150635
1097	164385	163948	164385
1098	165690	166115	165408
1099	168742	168425	168742
1100	170509	170793	170509
1101	177145	177474	177145
1102	188295	188023	188295
1103	188791	188330	188791
1104	190629	190336	190626
1105	197313	197083	197307
1106	210914	211384	210956
1107	235160	234852	235160
1108	237227	236913	237188
1109	249733	249446	249904
1110	253493	253158	253493
1111	253701	254789	253701
1112	271633	271932	271633
1113	275666	276070	275666
1114	277931	278218	277976
1115	282741	282481	282738
1116	293178	293489	293181
1117	303155	303469	303185
1118	309297	308965	309297
1119	312219	312536	312246
1120	312853	312602	312844
1121	313167	312772	313167

SEQ ID NO	begin	stop	preferred start
1122	320224	320598	320224
1123	340249	340503	340249
1124	352839	353324	352839
1125	373475	373699	373475
1126	377316	377756	377316
1127	379268	379657	379268
1128	395098	394823	395077
1129	401594	401142	401594
1130	410045	410539	410045
1131	411425	411658	411425
1132	414937	414416	414937
1133	422889	423212	422964
1134	427842	428183	427842
1135	428732	429451	428732
1136	442557	442799	442524
1137	443628	444041	443628
1138	443678	443166	443678
1139	445901	446155	445901
1140	467981	468262	468023
1141	471869	472108	471869
1142	488032	488337	488044
1143	497179	497694	497101
1144	500474	500202	500471
1145	508968	509561	508968
1146	510845	511264	510845
1147	526525	526848	526525
1148	531318	531863	531444
1149	556826	557224	556826
1150	564971	564537	564971
1151	566963	567232	566963
1152	570351	570890	570351
1153	571072	571332	571072
1154	576025	575801	576025
1155	590363	590650	590363

SEQ ID NO	begin	stop	preferred start
1156	597868	598593	597868
1157	606889	606626	606889
1158	608031	607786	608031
1159	610110	610391	610143
1160	632703	633353	632703
1161	637213	637482	637255
1162	650517	649924	650517
1163	652317	652562	652317
1164	654753	655325	654753
1165	661118	660810	661118
1166	677596	677057	677578
1167	679528	679253	679477
1168	732536	732210	732536
1169	742069	742383	742069
1170	759318	758782	759318
1171	760282	760521	760282
1172	771313	770894	771391
1173	772115	772408	772115
1174	788137	788457	788137
1175	816302	815967	816302
1176	846606	846914	846612
1177	867803	868054	867806
1178	875386	875658	875395
1179	876445	876915	876445
1180	884548	884312	884548
1181	891859	891467	891859
1182	900770	900417	900728
1183	902553	902269	902529
1184	908046	907783	908007
1185	912313	912567	912313
1186	935451	935741	935451
1187	946961	946692	946940
1188	953193	952783	953145
1189	966199	965873	966184

SEQ ID NO	begin	stop	preferred start
1190	969298	968765	969298
1191	971009	970731	971009
1192	972162	972404	972165
1193	973119	973508	973119
1194	998649	998404	998625
1195	1004280	1003882	1004280
1196	1010200	1009532	1010200
1197	1029174	1029482	1029180

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TABLE 4

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
2	1199	1198	3591	3590
3	1201	1200	3593	3592
4	1203	1202	3595	3594
5	1205	1204	3597	3596
6	1207	1206	3599	3598
7	1209	1208	3601	3600
8	1211	1210	3603	3602
9	1213	1212	3605	3604
10	1215	1214	3607	3606
11	1217	1216	3609	3608
12	1219	1218	3611	3610
13	1221	1220	3613	3612
14	1223	1222	3615	3614
15	1225	1224	3617	3616
16	1227	1226	3619	3618
17	1229	1228	3621	3620
18	1231	1230	3623	3622
19	1233	1232	3625	3624
20	1235	1234	3627	3626
21	1237	1236	3629	3628
22	1239	1238	3631	3630
23	1241	1240	3633	3632
24	1243	1242	3635	3634
25	1245	1244	3637	3636
26	1247	1246	3639	3638
27	1249	1248	3641	3640
28	1251	1250	3643	3642
29	1253	1252	3645	3644
30	1255	1254	3647	3646
31	1257	1256	3649	3648
32	1259	1258	3651	3650
33	1261	1260	3653	3652

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
34	1263	1262	3655	3654
35	1265	1264	3657	3656
36	1267	1266	3659	3658
37	1269	1268	3661	3660
38	1271	1270	3663	3662
39	1273	1272	3665	3664
40	1275	1274	3667	3666
41	1277	1276	3669	3668
42	1279	1278	3671	3670
43	1281	1280	3673	3672
44	1283	1282	3675	3674
45	1285	1284	3677	3676
46	1287	1286	3679	3678
47	1289	1288	3681	3680
48	1291	1290	3683	3682
49	1293	1292	3685	3684
50	1295	1294	3687	3686
51	1297	1296	3689	3688
52	1299	1298	3691	3690
53	1301	1300	3693	3692
54	1303	1302	3695	3694
55	1305	1304	3697	3696
56	1307	1306	3699	3698
57	1309	1308	3701	3700
58	1311	1310	3703	3702
59	1313	1312	3705	3704
60	1315	1314	3707	3706
61	1317	1316	3709	3708
62	1319	1318	3711	3710
63	1321	1320	3713	3712
64	1323	1322	3715	3714
65	1325	1324	3717	3716
66	1327	1326	3719	3718
67	1329	1328	3721	3720

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
68	1331	1330	3723	3722
69	1333	1332	3725	3724
70	1335	1334	3727	3726
71	1337	1336	3729	3728
72	1339	1338	3731	3730
73	1341	1340	3733	3732
74	1343	1342	3735	3734
75	1345	1344	3737	3736
76	1347	1346	3739	3738
77	1349	1348	3741	3740
78	1351	1350	3743	3742
79	1353	1352	3745	3744
80	1355	1354	3747	3746
81	1357	1356	3749	3748
82	1359	1358	3751	3750
83	1361	1360	3753	3752
84	1363	1362	3755	3754
85	1365	1364	3757	3756
86	1367	1366	3759	3758
87	1369	1368	3761	3760
88	1371	1370	3763	3762
89	1373	1372	3765	3764
90	1375	1374	3767	3766
91	1377	1376	3769	3768
92	1379	1378	3771	3770
93	1381	1380	3773	3772
94	1383	1382	3775	3774
95	1385	1384	3777	3776
96	1387	1386	3779	3778
97	1389	1388	3781	3780
98	1391	1390	3783	3782
99	1393	1392	3785	3784
100	1395	1394	3787	3786
101	1397	1396	3789	3788

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
102	1399	1398	3791	3790
103	1401	1400	3793	3792
104	1403	1402	3795	3794
105	1405	1404	3797	3796
106	1407	1406	3799	3798
107	1409	1408	3801	3800
108	1411	1410	3803	3802
109	1413	1412	3805	3804
110	1415	1414	3807	3806
111	1417	1416	3809	3808
112	1419	1418	3811	3810
113	1421	1420	3813	3812
114	1423	1422	3815	3814
115	1425	1424	3817	3816
116	1427	1426	3819	3818
117	1429	1428	3821	3820
118	1431	1430	3823	3822
119	1433	1432	3825	3824
120	1435	1434	3827	3826
121	1437	1436	3829	3828
122	1439	1438	3831	3830
123	1441	1440	3833	3832
124	1443	1442	3835	3834
125	1445	1444	3837	3836
126	1447	1446	3839	3838
127	1449	1448	3841	3840
128	1451	1450	3843	3842
129	1453	1452	3845	3844
130	1455	1454	3847	3846
131	1457	1456	3849	3848
132	1459	1458	3851	3850
133	1461	1460	3853	3852
134	1463	1462	3855	3854
135	1465	1464	3857	3856

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
136	1467	1466	3859	3858
137	1469	1468	3861	3860
138	1471	1470	3863	3862
139	1473	1472	3865	3864
140	1475	1474	3867	3866
141	1477	1476	3869	3868
142	1479	1478	3871	3870
143	1481	1480	3873	3872
144	1483	1482	3875	3874
145	1485	1484	3877	3876
146	1487	1486	3879	3878
147	1489	1488	3881	3880
148	1491	1490	3883	3882
149	1493	1492	3885	3884
150	1495	1494	3887	3886
151	1497	1496	3889	3888
152	1499	1498	3891	3890
153	1501	1500	3893	3892
154	1503	1502	3895	3894
155	1505	1504	3897	3896
156	1507	1506	3899	3898
157	1509	1508	3901	3900
158	1511	1510	3903	3902
159	1513	1512	3905	3904
160	1515	1514	3907	3906
161	1517	1516	3909	3908
162	1519	1518	3911	3910
163	1521	1520	3913	3912
164	1523	1522	3915	3914
165	1525	1524	3917	3916
166	1527	1526	3919	3918
167	1529	1528	3921	3920
168	1531	1530	3923	3922
169	1533	1532	3925	3924

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
170	1535	1534	3927	3926
171	1537	1536	3929	3928
172	1539	1538	3931	3930
173	1541	1540	3933	3932
174	1543	1542	3935	3934
175	1545	1544	3937	3936
176	1547	1546	3939	3938
177	1549	1548	3941	3940
178	1551	1550	3943	3942
179	1553	1552	3945	3944
180	1555	1554	3947	3946
181	1557	1556	3949	3948
182	1559	1558	3951	3950
183	1561	1560	3953	3952
184	1563	1562	3955	3954
185	1565	1564	3957	3956
186	1567	1566	3959	3958
187	1569	1568	3961	3960
188	1571	1570	3963	3962
189	1573	1572	3965	3964
190	1575	1574	3967	3966
191	1577	1576	3969	3968
192	1579	1578	3971	3970
193	1581	1580	3973	3972
194	1583	1582	3975	3974
195	1585	1584	3977	3976
196	1587	1586	3979	3978
197	1589	1588	3981	3980
198	1591	1590	3983	3982
199	1593	1592	3985	3984
200	1595	1594	3987	3986
201	1597	1596	3989	3988
202	1599	1598	3991	3990
203	1601	1600	3993	3992

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
204	1603	1602	3995	3994
205	1605	1604	3997	3996
206	1607	1606	3999	3998
207	1609	1608	4001	4000
208	1611	1610	4003	4002
209	1613	1612	4005	4004
210	1615	1614	4007	4006
211	1617	1616	4009	4008
212	1619	1618	4011	4010
213	1621	1620	4013	4012
214	1623	1622	4015	4014
215	1625	1624	4017	4016
216	1627	1626	4019	4018
217	1629	1628	4021	4020
218	1631	1630	4023	4022
219	1633	1632	4025	4024
220	1635	1634	4027	4026
221	1637	1636	4029	4028
222	1639	1638	4031	4030
223	1641	1640	4033	4032
224	1643	1642	4035	4034
225	1645	1644	4037	4036
226	1647	1646	4039	4038
227	1649	1648	4041	4040
228	1651	1650	4043	4042
229	1653	1652	4045	4044
230	1655	1654	4047	4046
231	1657	1656	4049	4048
232	1659	1658	4051	4050
233	1661	1660	4053	4052
234	1663	1662	4055	4054
235	1665	1664	4057	4056
236	1667	1666	4059	4058
237	1669	1668	4061	4060

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
238	1671	1670	4063	4062
239	1673	1672	4065	4064
240	1675	1674	4067	4066
241	1677	1676	4069	4068
242	1679	1678	4071	4070
243	1681	1680	4073	4072
244	1683	1682	4075	4074
245	1685	1684	4077	4076
246	1687	1686	4079	4078
247	1689	1688	4081	4080
248	1691	1690	4083	4082
249	1693	1692	4085	4084
250	1695	1694	4087	4086
251	1697	1696	4089	4088
252	1699	1698	4091	4090
253	1701	1700	4093	4092
254	1703	1702	4095	4094
255	1705	1704	4097	4096
256	1707	1706	4099	4098
257	1709	1708	4101	4100
258	1711	1710	4103	4102
259	1713	1712	4105	4104
260	1715	1714	4107	4106
261	1717	1716	4109	4108
262	1719	1718	4111	4110
263	1721	1720	4113	4112
264	1723	1722	4115	4114
265	1725	1724	4117	4116
266	1727	1726	4119	4118
267	1729	1728	4121	4120
268	1731	1730	4123	4122
269	1733	1732	4125	4124
270	1735	1734	4127	4126
271	1737	1736	4129	4128

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
272	1739	1738	4131	4130
273	1741	1740	4133	4132
274	1743	1742	4135	4134
275	1745	1744	4137	4136
276	1747	1746	4139	4138
277	1749	1748	4141	4140
278	1751	1750	4143	4142
279	1753	1752	4145	4144
280	1755	1754	4147	4146
281	1757	1756	4149	4148
282	1759	1758	4151	4150
283	1761	1760	4153	4152
284	1763	1762	4155	4154
285	1765	1764	4157	4156
286	1767	1766	4159	4158
287	1769	1768	4161	4160
288	1771	1770	4163	4162
289	1773	1772	4165	4164
290	1775	1774	4167	4166
291	1777	1776	4169	4168
292	1779	1778	4171	4170
293	1781	1780	4173	4172
294	1783	1782	4175	4174
295	1785	1784	4177	4176
296	1787	1786	4179	4178
297	1789	1788	4181	4180
298	1791	1790	4183	4182
299	1793	1792	4185	4184
300	1795	1794	4187	4186
301	1797	1796	4189	4188
302	1799	1798	4191	4190
303	1801	1800	4193	4192
304	1803	1802	4195	4194
305	1805	1804	4197	4196

Sheet 52 Fig 50

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
306	1807	1806	4199	4198
307	1809	1808	4201	4200
308	1811	1810	4203	4202
309	1813	1812	4205	4204
310	1815	1814	4207	4206
311	1817	1816	4209	4208
312	1819	1818	4211	4210
313	1821	1820	4213	4212
314	1823	1822	4215	4214
315	1825	1824	4217	4216
316	1827	1826	4219	4218
317	1829	1828	4221	4220
318	1831	1830	4223	4222
319	1833	1832	4225	4224
320	1835	1834	4227	4226
321	1837	1836	4229	4228
322	1839	1838	4231	4230
323	1841	1840	4233	4232
324	1843	1842	4235	4234
325	1845	1844	4237	4236
326	1847	1846	4239	4238
327	1849	1848	4241	4240
328	1851	1850	4243	4242
329	1853	1852	4245	4244
330	1855	1854	4247	4246
331	1857	1856	4249	4248
332	1859	1858	4251	4250
333	1861	1860	4253	4252
334	1863	1862	4255	4254
335	1865	1864	4257	4256
336	1867	1866	4259	4258
337	1869	1868	4261	4260
338	1871	1870	4263	4262
339	1873	1872	4265	4264

Sequence Location

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
340	1875	1874	4267	4266
341	1877	1876	4269	4268
342	1879	1878	4271	4270
343	1881	1880	4273	4272
344	1883	1882	4275	4274
345	1885	1884	4277	4276
346	1887	1886	4279	4278
347	1889	1888	4281	4280
348	1891	1890	4283	4282
349	1893	1892	4285	4284
350	1895	1894	4287	4286
351	1897	1896	4289	4288
352	1899	1898	4291	4290
353	1901	1900	4293	4292
354	1903	1902	4295	4294
355	1905	1904	4297	4296
356	1907	1906	4299	4298
357	1909	1908	4301	4300
358	1911	1910	4303	4302
359	1913	1912	4305	4304
360	1915	1914	4307	4306
361	1917	1916	4309	4308
362	1919	1918	4311	4310
363	1921	1920	4313	4312
364	1923	1922	4315	4314
365	1925	1924	4317	4316
366	1927	1926	4319	4318
367	1929	1928	4321	4320
368	1931	1930	4323	4322
369	1933	1932	4325	4324
370	1935	1934	4327	4326
371	1937	1936	4329	4328
372	1939	1938	4331	4330
373	1941	1940	4333	4332

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
374	1943	1942	4335	4334
375	1945	1944	4337	4336
376	1947	1946	4339	4338
377	1949	1948	4341	4340
378	1951	1950	4343	4342
379	1953	1952	4345	4344
380	1955	1954	4347	4346
381	1957	1956	4349	4348
382	1959	1958	4351	4350
383	1961	1960	4353	4352
384	1963	1962	4355	4354
385	1965	1964	4357	4356
386	1967	1966	4359	4358
387	1969	1968	4361	4360
388	1971	1970	4363	4362
389	1973	1972	4365	4364
390	1975	1974	4367	4366
391	1977	1976	4369	4368
392	1979	1978	4371	4370
393	1981	1980	4373	4372
394	1983	1982	4375	4374
395	1985	1984	4377	4376
396	1987	1986	4379	4378
397	1989	1988	4381	4380
398	1991	1990	4383	4382
399	1993	1992	4385	4384
400	1995	1994	4387	4386
401	1997	1996	4389	4388
402	1999	1998	4391	4390
403	2001	2000	4393	4392
404	2003	2002	4395	4394
405	2005	2004	4397	4396
406	2007	2006	4399	4398
407	2009	2008	4401	4400

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
408	2011	2010	4403	4402
409	2013	2012	4405	4404
410	2015	2014	4407	4406
411	2017	2016	4409	4408
412	2019	2018	4411	4410
413	2021	2020	4413	4412
414	2023	2022	4415	4414
415	2025	2024	4417	4416
416	2027	2026	4419	4418
417	2029	2028	4421	4420
418	2031	2030	4423	4422
419	2033	2032	4425	4424
420	2035	2034	4427	4426
421	2037	2036	4429	4428
422	2039	2038	4431	4430
423	2041	2040	4433	4432
424	2043	2042	4435	4434
425	2045	2044	4437	4436
426	2047	2046	4439	4438
427	2049	2048	4441	4440
428	2051	2050	4443	4442
429	2053	2052	4445	4444
430	2055	2054	4447	4446
431	2057	2056	4449	4448
432	2059	2058	4451	4450
433	2061	2060	4453	4452
434	2063	2062	4455	4454
435	2065	2064	4457	4456
436	2067	2066	4459	4458
437	2069	2068	4461	4460
438	2071	2070	4463	4462
439	2073	2072	4465	4464
440	2075	2074	4467	4466
441	2077	2076	4469	4468

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
442	2079	2078	4471	4470
443	2081	2080	4473	4472
444	2083	2082	4475	4474
445	2085	2084	4477	4476
446	2087	2086	4479	4478
447	2089	2088	4481	4480
448	2091	2090	4483	4482
449	2093	2092	4485	4484
450	2095	2094	4487	4486
451	2097	2096	4489	4488
452	2099	2098	4491	4490
453	2101	2100	4493	4492
454	2103	2102	4495	4494
455	2105	2104	4497	4496
456	2107	2106	4499	4498
457	2109	2108	4501	4500
458	2111	2110	4503	4502
459	2113	2112	4505	4504
460	2115	2114	4507	4506
461	2117	2116	4509	4508
462	2119	2118	4511	4510
463	2121	2120	4513	4512
464	2123	2122	4515	4514
465	2125	2124	4517	4516
466	2127	2126	4519	4518
467	2129	2128	4521	4520
468	2131	2130	4523	4522
469	2133	2132	4525	4524
470	2135	2134	4527	4526
471	2137	2136	4529	4528
472	2139	2138	4531	4530
473	2141	2140	4533	4532
474	2143	2142	4535	4534
475	2145	2144	4537	4536

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
476	2147	2146	4539	4538
477	2149	2148	4541	4540
478	2151	2150	4543	4542
479	2153	2152	4545	4544
480	2155	2154	4547	4546
481	2157	2156	4549	4548
482	2159	2158	4551	4550
483	2161	2160	4553	4552
484	2163	2162	4555	4554
485	2165	2164	4557	4556
486	2167	2166	4559	4558
487	2169	2168	4561	4560
488	2171	2170	4563	4562
489	2173	2172	4565	4564
490	2175	2174	4567	4566
491	2177	2176	4569	4568
492	2179	2178	4571	4570
493	2181	2180	4573	4572
494	2183	2182	4575	4574
495	2185	2184	4577	4576
496	2187	2186	4579	4578
497	2189	2188	4581	4580
498	2191	2190	4583	4582
499	2193	2192	4585	4584
500	2195	2194	4587	4586
501	2197	2196	4589	4588
502	2199	2198	4591	4590
503	2201	2200	4593	4592
504	2203	2202	4595	4594
505	2205	2204	4597	4596
506	2207	2206	4599	4598
507	2209	2208	4601	4600
508	2211	2210	4603	4602
509	2213	2212	4605	4604

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
510	2215	2214	4607	4606
511	2217	2216	4609	4608
512	2219	2218	4611	4610
513	2221	2220	4613	4612
514	2223	2222	4615	4614
515	2225	2224	4617	4616
516	2227	2226	4619	4618
517	2229	2228	4621	4620
518	2231	2230	4623	4622
519	2233	2232	4625	4624
520	2235	2234	4627	4626
521	2237	2236	4629	4628
522	2239	2238	4631	4630
523	2241	2240	4633	4632
524	2243	2242	4635	4634
525	2245	2244	4637	4636
526	2247	2246	4639	4638
527	2249	2248	4641	4640
528	2251	2250	4643	4642
529	2253	2252	4645	4644
530	2255	2254	4647	4646
531	2257	2256	4649	4648
532	2259	2258	4651	4650
533	2261	2260	4653	4652
534	2263	2262	4655	4654
535	2265	2264	4657	4656
536	2267	2266	4659	4658
537	2269	2268	4661	4660
538	2271	2270	4663	4662
539	2273	2272	4665	4664
540	2275	2274	4667	4666
541	2277	2276	4669	4668
542	2279	2278	4671	4670
543	2281	2280	4673	4672

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
544	2283	2282	4675	4674
545	2285	2284	4677	4676
546	2287	2286	4679	4678
547	2289	2288	4681	4680
548	2291	2290	4683	4682
549	2293	2292	4685	4684
550	2295	2294	4687	4686
551	2297	2296	4689	4688
552	2299	2298	4691	4690
553	2301	2300	4693	4692
554	2303	2302	4695	4694
555	2305	2304	4697	4696
556	2307	2306	4699	4698
557	2309	2308	4701	4700
558	2311	2310	4703	4702
559	2313	2312	4705	4704
560	2315	2314	4707	4706
561	2317	2316	4709	4708
562	2319	2318	4711	4710
563	2321	2320	4713	4712
564	2323	2322	4715	4714
565	2325	2324	4717	4716
566	2327	2326	4719	4718
567	2329	2328	4721	4720
568	2331	2330	4723	4722
569	2333	2332	4725	4724
570	2335	2334	4727	4726
571	2337	2336	4729	4728
572	2339	2338	4731	4730
573	2341	2340	4733	4732
574	2343	2342	4735	4734
575	2345	2344	4737	4736
576	2347	2346	4739	4738
577	2349	2348	4741	4740

Sanofi-Aventis

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
578	2351	2350	4743	4742
579	2353	2352	4745	4744
580	2355	2354	4747	4746
581	2357	2356	4749	4748
582	2359	2358	4751	4750
583	2361	2360	4753	4752
584	2363	2362	4755	4754
585	2365	2364	4757	4756
586	2367	2366	4759	4758
587	2369	2368	4761	4760
588	2371	2370	4763	4762
589	2373	2372	4765	4764
590	2375	2374	4767	4766
591	2377	2376	4769	4768
592	2379	2378	4771	4770
593	2381	2380	4773	4772
594	2383	2382	4775	4774
595	2385	2384	4777	4776
596	2387	2386	4779	4778
597	2389	2388	4781	4780
598	2391	2390	4783	4782
599	2393	2392	4785	4784
600	2395	2394	4787	4786
601	2397	2396	4789	4788
602	2399	2398	4791	4790
603	2401	2400	4793	4792
604	2403	2402	4795	4794
605	2405	2404	4797	4796
606	2407	2406	4799	4798
607	2409	2408	4801	4800
608	2411	2410	4803	4802
609	2413	2412	4805	4804
610	2415	2414	4807	4806
611	2417	2416	4809	4808

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
612	2419	2418	4811	4810
613	2421	2420	4813	4812
614	2423	2422	4815	4814
615	2425	2424	4817	4816
616	2427	2426	4819	4818
617	2429	2428	4821	4820
618	2431	2430	4823	4822
619	2433	2432	4825	4824
620	2435	2434	4827	4826
621	2437	2436	4829	4828
622	2439	2438	4831	4830
623	2441	2440	4833	4832
624	2443	2442	4835	4834
625	2445	2444	4837	4836
626	2447	2446	4839	4838
627	2449	2448	4841	4840
628	2451	2450	4843	4842
629	2453	2452	4845	4844
630	2455	2454	4847	4846
631	2457	2456	4849	4848
632	2459	2458	4851	4850
633	2461	2460	4853	4852
634	2463	2462	4855	4854
635	2465	2464	4857	4856
636	2467	2466	4859	4858
637	2469	2468	4861	4860
638	2471	2470	4863	4862
639	2473	2472	4865	4864
640	2475	2474	4867	4866
641	2477	2476	4869	4868
642	2479	2478	4871	4870
643	2481	2480	4873	4872
644	2483	2482	4875	4874
645	2485	2484	4877	4876

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
646	2487	2486	4879	4878
647	2489	2488	4881	4880
648	2491	2490	4883	4882
649	2493	2492	4885	4884
650	2495	2494	4887	4886
651	2497	2496	4889	4888
652	2499	2498	4891	4890
653	2501	2500	4893	4892
654	2503	2502	4895	4894
655	2505	2504	4897	4896
656	2507	2506	4899	4898
657	2509	2508	4901	4900
658	2511	2510	4903	4902
659	2513	2512	4905	4904
660	2515	2514	4907	4906
661	2517	2516	4909	4908
662	2519	2518	4911	4910
663	2521	2520	4913	4912
664	2523	2522	4915	4914
665	2525	2524	4917	4916
666	2527	2526	4919	4918
667	2529	2528	4921	4920
668	2531	2530	4923	4922
669	2533	2532	4925	4924
670	2535	2534	4927	4926
671	2537	2536	4929	4928
672	2539	2538	4931	4930
673	2541	2540	4933	4932
674	2543	2542	4935	4934
675	2545	2544	4937	4936
676	2547	2546	4939	4938
677	2549	2548	4941	4940
678	2551	2550	4943	4942
679	2553	2552	4945	4944

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
680	2555	2554	4947	4946
681	2557	2556	4949	4948
682	2559	2558	4951	4950
683	2561	2560	4953	4952
684	2563	2562	4955	4954
685	2565	2564	4957	4956
686	2567	2566	4959	4958
687	2569	2568	4961	4960
688	2571	2570	4963	4962
689	2573	2572	4965	4964
690	2575	2574	4967	4966
691	2577	2576	4969	4968
692	2579	2578	4971	4970
693	2581	2580	4973	4972
694	2583	2582	4975	4974
695	2585	2584	4977	4976
696	2587	2586	4979	4978
697	2589	2588	4981	4980
698	2591	2590	4983	4982
699	2593	2592	4985	4984
700	2595	2594	4987	4986
701	2597	2596	4989	4988
702	2599	2598	4991	4990
703	2601	2600	4993	4992
704	2603	2602	4995	4994
705	2605	2604	4997	4996
706	2607	2606	4999	4998
707	2609	2608	5001	5000
708	2611	2610	5003	5002
709	2613	2612	5005	5004
710	2615	2614	5007	5006
711	2617	2616	5009	5008
712	2619	2618	5011	5010
713	2621	2620	5013	5012

Sent by: ace IP Group

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
714	2623	2622	5015	5014
715	2625	2624	5017	5016
716	2627	2626	5019	5018
717	2629	2628	5021	5020
718	2631	2630	5023	5022
719	2633	2632	5025	5024
720	2635	2634	5027	5026
721	2637	2636	5029	5028
722	2639	2638	5031	5030
723	2641	2640	5033	5032
724	2643	2642	5035	5034
725	2645	2644	5037	5036
726	2647	2646	5039	5038
727	2649	2648	5041	5040
728	2651	2650	5043	5042
729	2653	2652	5045	5044
730	2655	2654	5047	5046
731	2657	2656	5049	5048
732	2659	2658	5051	5050
733	2661	2660	5053	5052
734	2663	2662	5055	5054
735	2665	2664	5057	5056
736	2667	2666	5059	5058
737	2669	2668	5061	5060
738	2671	2670	5063	5062
739	2673	2672	5065	5064
740	2675	2674	5067	5066
741	2677	2676	5069	5068
742	2679	2678	5071	5070
743	2681	2680	5073	5072
744	2683	2682	5075	5074
745	2685	2684	5077	5076
746	2687	2686	5079	5078
747	2689	2688	5081	5080

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
748	2691	2690	5083	5082
749	2693	2692	5085	5084
750	2695	2694	5087	5086
751	2697	2696	5089	5088
752	2699	2698	5091	5090
753	2701	2700	5093	5092
754	2703	2702	5095	5094
755	2705	2704	5097	5096
756	2707	2706	5099	5098
757	2709	2708	5101	5100
758	2711	2710	5103	5102
759	2713	2712	5105	5104
760	2715	2714	5107	5106
761	2717	2716	5109	5108
762	2719	2718	5111	5110
763	2721	2720	5113	5112
764	2723	2722	5115	5114
765	2725	2724	5117	5116
766	2727	2726	5119	5118
767	2729	2728	5121	5120
768	2731	2730	5123	5122
769	2733	2732	5125	5124
770	2735	2734	5127	5126
771	2737	2736	5129	5128
772	2739	2738	5131	5130
773	2741	2740	5133	5132
774	2743	2742	5135	5134
775	2745	2744	5137	5136
776	2747	2746	5139	5138
777	2749	2748	5141	5140
778	2751	2750	5143	5142
779	2753	2752	5145	5144
780	2755	2754	5147	5146
781	2757	2756	5149	5148

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
782	2759	2758	5151	5150
783	2761	2760	5153	5152
784	2763	2762	5155	5154
785	2765	2764	5157	5156
786	2767	2766	5159	5158
787	2769	2768	5161	5160
788	2771	2770	5163	5162
789	2773	2772	5165	5164
790	2775	2774	5167	5166
791	2777	2776	5169	5168
792	2779	2778	5171	5170
793	2781	2780	5173	5172
794	2783	2782	5175	5174
795	2785	2784	5177	5176
796	2787	2786	5179	5178
797	2789	2788	5181	5180
798	2791	2790	5183	5182
799	2793	2792	5185	5184
800	2795	2794	5187	5186
801	2797	2796	5189	5188
802	2799	2798	5191	5190
803	2801	2800	5193	5192
804	2803	2802	5195	5194
805	2805	2804	5197	5196
806	2807	2806	5199	5198
807	2809	2808	5201	5200
808	2811	2810	5203	5202
809	2813	2812	5205	5204
810	2815	2814	5207	5206
811	2817	2816	5209	5208
812	2819	2818	5211	5210
813	2821	2820	5213	5212
814	2823	2822	5215	5214
815	2825	2824	5217	5216

Schutt Sand Co 250

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
816	2827	2826	5219	5218
817	2829	2828	5221	5220
818	2831	2830	5223	5222
819	2833	2832	5225	5224
820	2835	2834	5227	5226
821	2837	2836	5229	5228
822	2839	2838	5231	5230
823	2841	2840	5233	5232
824	2843	2842	5235	5234
825	2845	2844	5237	5236
826	2847	2846	5239	5238
827	2849	2848	5241	5240
828	2851	2850	5243	5242
829	2853	2852	5245	5244
830	2855	2854	5247	5246
831	2857	2856	5249	5248
832	2859	2858	5251	5250
833	2861	2860	5253	5252
834	2863	2862	5255	5254
835	2865	2864	5257	5256
836	2867	2866	5259	5258
837	2869	2868	5261	5260
838	2871	2870	5263	5262
839	2873	2872	5265	5264
840	2875	2874	5267	5266
841	2877	2876	5269	5268
842	2879	2878	5271	5270
843	2881	2880	5273	5272
844	2883	2882	5275	5274
845	2885	2884	5277	5276
846	2887	2886	5279	5278
847	2889	2888	5281	5280
848	2891	2890	5283	5282
849	2893	2892	5285	5284

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
850	2895	2894	5287	5286
851	2897	2896	5289	5288
852	2899	2898	5291	5290
853	2901	2900	5293	5292
854	2903	2902	5295	5294
855	2905	2904	5297	5296
856	2907	2906	5299	5298
857	2909	2908	5301	5300
858	2911	2910	5303	5302
859	2913	2912	5305	5304
860	2915	2914	5307	5306
861	2917	2916	5309	5308
862	2919	2918	5311	5310
863	2921	2920	5313	5312
864	2923	2922	5315	5314
865	2925	2924	5317	5316
866	2927	2926	5319	5318
867	2929	2928	5321	5320
868	2931	2930	5323	5322
869	2933	2932	5325	5324
870	2935	2934	5327	5326
871	2937	2936	5329	5328
872	2939	2938	5331	5330
873	2941	2940	5333	5332
874	2943	2942	5335	5334
875	2945	2944	5337	5336
876	2947	2946	5339	5338
877	2949	2948	5341	5340
878	2951	2950	5343	5342
879	2953	2952	5345	5344
880	2955	2954	5347	5346
881	2957	2956	5349	5348
882	2959	2958	5351	5350
883	2961	2960	5353	5352

Confidential

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
884	2963	2962	5355	5354
885	2965	2964	5357	5356
886	2967	2966	5359	5358
887	2969	2968	5361	5360
888	2971	2970	5363	5362
889	2973	2972	5365	5364
890	2975	2974	5367	5366
891	2977	2976	5369	5368
892	2979	2978	5371	5370
893	2981	2980	5373	5372
894	2983	2982	5375	5374
895	2985	2984	5377	5376
896	2987	2986	5379	5378
897	2989	2988	5381	5380
898	2991	2990	5383	5382
899	2993	2992	5385	5384
900	2995	2994	5387	5386
901	2997	2996	5389	5388
902	2999	2998	5391	5390
903	3001	3000	5393	5392
904	3003	3002	5395	5394
905	3005	3004	5397	5396
906	3007	3006	5399	5398
907	3009	3008	5401	5400
908	3011	3010	5403	5402
909	3013	3012	5405	5404
910	3015	3014	5407	5406
911	3017	3016	5409	5408
912	3019	3018	5411	5410
913	3021	3020	5413	5412
914	3023	3022	5415	5414
915	3025	3024	5417	5416
916	3027	3026	5419	5418
917	3029	3028	5421	5420

Sequenced

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
918	3031	3030	5423	5422
919	3033	3032	5425	5424
920	3035	3034	5427	5426
921	3037	3036	5429	5428
922	3039	3038	5431	5430
923	3041	3040	5433	5432
924	3043	3042	5435	5434
925	3045	3044	5437	5436
926	3047	3046	5439	5438
927	3049	3048	5441	5440
928	3051	3050	5443	5442
929	3053	3052	5445	5444
930	3055	3054	5447	5446
931	3057	3056	5449	5448
932	3059	3058	5451	5450
933	3061	3060	5453	5452
934	3063	3062	5455	5454
935	3065	3064	5457	5456
936	3067	3066	5459	5458
937	3069	3068	5461	5460
938	3071	3070	5463	5462
939	3073	3072	5465	5464
940	3075	3074	5467	5466
941	3077	3076	5469	5468
942	3079	3078	5471	5470
943	3081	3080	5473	5472
944	3083	3082	5475	5474
945	3085	3084	5477	5476
946	3087	3086	5479	5478
947	3089	3088	5481	5480
948	3091	3090	5483	5482
949	3093	3092	5485	5484
950	3095	3094	5487	5486
951	3097	3096	5489	5488

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
952	3099	3098	5491	5490
953	3101	3100	5493	5492
954	3103	3102	5495	5494
955	3105	3104	5497	5496
956	3107	3106	5499	5498
957	3109	3108	5501	5500
958	3111	3110	5503	5502
959	3113	3112	5505	5504
960	3115	3114	5507	5506
961	3117	3116	5509	5508
962	3119	3118	5511	5510
963	3121	3120	5513	5512
964	3123	3122	5515	5514
965	3125	3124	5517	5516
966	3127	3126	5519	5518
967	3129	3128	5521	5520
968	3131	3130	5523	5522
969	3133	3132	5525	5524
970	3135	3134	5527	5526
971	3137	3136	5529	5528
972	3139	3138	5531	5530
973	3141	3140	5533	5532
974	3143	3142	5535	5534
975	3145	3144	5537	5536
976	3147	3146	5539	5538
977	3149	3148	5541	5540
978	3151	3150	5543	5542
979	3153	3152	5545	5544
980	3155	3154	5547	5546
981	3157	3156	5549	5548
982	3159	3158	5551	5550
983	3161	3160	5553	5552
984	3163	3162	5555	5554
985	3165	3164	5557	5556

Docket: 5000250

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
986	3167	3166	5559	5558
987	3169	3168	5561	5560
988	3171	3170	5563	5562
989	3173	3172	5565	5564
990	3175	3174	5567	5566
991	3177	3176	5569	5568
992	3179	3178	5571	5570
993	3181	3180	5573	5572
994	3183	3182	5575	5574
995	3185	3184	5577	5576
996	3187	3186	5579	5578
997	3189	3188	5581	5580
998	3191	3190	5583	5582
999	3193	3192	5585	5584
1000	3195	3194	5587	5586
1001	3197	3196	5589	5588
1002	3199	3198	5591	5590
1003	3201	3200	5593	5592
1004	3203	3202	5595	5594
1005	3205	3204	5597	5596
1006	3207	3206	5599	5598
1007	3209	3208	5601	5600
1008	3211	3210	5603	5602
1009	3213	3212	5605	5604
1010	3215	3214	5607	5606
1011	3217	3216	5609	5608
1012	3219	3218	5611	5610
1013	3221	3220	5613	5612
1014	3223	3222	5615	5614
1015	3225	3224	5617	5616
1016	3227	3226	5619	5618
1017	3229	3228	5621	5620
1018	3231	3230	5623	5622
1019	3233	3232	5625	5624

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
1020	3235	3234	5627	5626
1021	3237	3236	5629	5628
1022	3239	3238	5631	5630
1023	3241	3240	5633	5632
1024	3243	3242	5635	5634
1025	3245	3244	5637	5636
1026	3247	3246	5639	5638
1027	3249	3248	5641	5640
1028	3251	3250	5643	5642
1029	3253	3252	5645	5644
1030	3255	3254	5647	5646
1031	3257	3256	5649	5648
1032	3259	3258	5651	5650
1033	3261	3260	5653	5652
1034	3263	3262	5655	5654
1035	3265	3264	5657	5656
1036	3267	3266	5659	5658
1037	3269	3268	5661	5660
1038	3271	3270	5663	5662
1039	3273	3272	5665	5664
1040	3275	3274	5667	5666
1041	3277	3276	5669	5668
1042	3279	3278	5671	5670
1043	3281	3280	5673	5672
1044	3283	3282	5675	5674
1045	3285	3284	5677	5676
1046	3287	3286	5679	5678
1047	3289	3288	5681	5680
1048	3291	3290	5683	5682
1049	3293	3292	5685	5684
1050	3295	3294	5687	5686
1051	3297	3296	5689	5688
1052	3299	3298	5691	5690
1053	3301	3300	5693	5692

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
1054	3303	3302	5695	5694
1055	3305	3304	5697	5696
1056	3307	3306	5699	5698
1057	3309	3308	5701	5700
1058	3311	3310	5703	5702
1059	3313	3312	5705	5704
1060	3315	3314	5707	5706
1061	3317	3316	5709	5708
1062	3319	3318	5711	5710
1063	3321	3320	5713	5712
1064	3323	3322	5715	5714
1065	3325	3324	5717	5716
1066	3327	3326	5719	5718
1067	3329	3328	5721	5720
1068	3331	3330	5723	5722
1069	3333	3332	5725	5724
1070	3335	3334	5727	5726
1071	3337	3336	5729	5728
1072	3339	3338	5731	5730
1073	3341	3340	5733	5732
1074	3343	3342	5735	5734
1075	3345	3344	5737	5736
1076	3347	3346	5739	5738
1077	3349	3348	5741	5740
1078	3351	3350	5743	5742
1079	3353	3352	5745	5744
1080	3355	3354	5747	5746
1081	3357	3356	5749	5748
1082	3359	3358	5751	5750
1083	3361	3360	5753	5752
1084	3363	3362	5755	5754
1085	3365	3364	5757	5756
1086	3367	3366	5759	5758
1087	3369	3368	5761	5760

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
1088	3371	3370	5763	5762
1089	3373	3372	5765	5764
1090	3375	3374	5767	5766
1091	3377	3376	5769	5768
1092	3379	3378	5771	5770
1093	3381	3380	5773	5772
1094	3383	3382	5775	5774
1095	3385	3384	5777	5776
1096	3387	3386	5779	5778
1097	3389	3388	5781	5780
1098	3391	3390	5783	5782
1099	3393	3392	5785	5784
1100	3395	3394	5787	5786
1101	3397	3396	5789	5788
1102	3399	3398	5791	5790
1103	3401	3400	5793	5792
1104	3403	3402	5795	5794
1105	3405	3404	5797	5796
1106	3407	3406	5799	5798
1107	3409	3408	5801	5800
1108	3411	3410	5803	5802
1109	3413	3412	5805	5804
1110	3415	3414	5807	5806
1111	3417	3416	5809	5808
1112	3419	3418	5811	5810
1113	3421	3420	5813	5812
1114	3423	3422	5815	5814
1115	3425	3424	5817	5816
1116	3427	3426	5819	5818
1117	3429	3428	5821	5820
1118	3431	3430	5823	5822
1119	3433	3432	5825	5824
1120	3435	3434	5827	5826
1121	3437	3436	5829	5828

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
1122	3439	3438	5831	5830
1123	3441	3440	5833	5832
1124	3443	3442	5835	5834
1125	3445	3444	5837	5836
1126	3447	3446	5839	5838
1127	3449	3448	5841	5840
1128	3451	3450	5843	5842
1129	3453	3452	5845	5844
1130	3455	3454	5847	5846
1131	3457	3456	5849	5848
1132	3459	3458	5851	5850
1133	3461	3460	5853	5852
1134	3463	3462	5855	5854
1135	3465	3464	5857	5856
1136	3467	3466	5859	5858
1137	3469	3468	5861	5860
1138	3471	3470	5863	5862
1139	3473	3472	5865	5864
1140	3475	3474	5867	5866
1141	3477	3476	5869	5868
1142	3479	3478	5871	5870
1143	3481	3480	5873	5872
1144	3483	3482	5875	5874
1145	3485	3484	5877	5876
1146	3487	3486	5879	5878
1147	3489	3488	5881	5880
1148	3491	3490	5883	5882
1149	3493	3492	5885	5884
1150	3495	3494	5887	5886
1151	3497	3496	5889	5888
1152	3499	3498	5891	5890
1153	3501	3500	5893	5892
1154	3503	3502	5895	5894
1155	3505	3504	5897	5896

ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
1156	3507	3506	5899	5898
1157	3509	3508	5901	5900
1158	3511	3510	5903	5902
1159	3513	3512	5905	5904
1160	3515	3514	5907	5906
1161	3517	3516	5909	5908
1162	3519	3518	5911	5910
1163	3521	3520	5913	5912
1164	3523	3522	5915	5914
1165	3525	3524	5917	5916
1166	3527	3526	5919	5918
1167	3529	3528	5921	5920
1168	3531	3530	5923	5922
1169	3533	3532	5925	5924
1170	3535	3534	5927	5926
1171	3537	3536	5929	5928
1172	3539	3538	5931	5930
1173	3541	3540	5933	5932
1174	3543	3542	5935	5934
1175	3545	3544	5937	5936
1176	3547	3546	5939	5938
1177	3549	3548	5941	5940
1178	3551	3550	5943	5942
1179	3553	3552	5945	5944
1180	3555	3554	5947	5946
1181	3557	3556	5949	5948
1182	3559	3558	5951	5950
1183	3561	3560	5953	5952
1184	3563	3562	5955	5954
1185	3565	3564	5957	5956
1186	3567	3566	5959	5958
1187	3569	3568	5961	5960
1188	3571	3570	5963	5962
1189	3573	3572	5965	5964

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ORFGenset	ORFoligosFd	ORFoligosFp	ORFoligosBd	ORFoligosBp
1190	3575	3574	5967	5966
1191	3577	3576	5969	5968
1192	3579	3578	5971	5970
1193	3581	3580	5973	5972
1194	3583	3582	5975	5974
1195	3585	3584	5977	5976
1196	3587	3586	5979	5978
1197	3589	3588	5981	5980

TABLE 5

SEQ ID	Or.	position
1198	F	1038449
1199	F	1036517
1200	F	250
1201	F	1036965
1202	F	3011
1203	F	1123
1204	F	4907
1205	F	2996
1206	F	6379
1207	F	4483
1208	F	7837
1209	F	5961
1210	F	8351
1211	F	6467
1212	F	8705
1213	F	6834
1214	F	9598
1215	F	7709
1216	F	10134
1217	F	8248
1218	F	10990
1219	F	9060
1220	F	11823
1221	F	9946
1222	F	13236
1223	F	11410
1224	F	14529
1225	F	12643
1226	F	14668
1227	F	12813
1228	F	15747
1229	F	13844

SEQ ID	Or.	position
2793	F	785793
2794	F	789918
2795	F	788039
2796	F	790378
2797	F	788456
2798	F	791834
2799	F	789918
2800	F	793102
2801	F	791176
2802	F	793826
2803	F	791921
2804	F	794911
2805	F	793023
2806	F	795296
2807	F	793427
2808	F	796005
2809	F	794127
2810	F	796729
2811	F	794811
2812	F	797041
2813	F	795065
2814	F	797553
2815	F	795651
2816	F	797716
2817	F	795815
2818	F	798197
2819	F	796285
2820	F	799004
2821	F	797173
2822	F	799785
2823	F	797910
2824	F	800789

SEQ ID	Or.	position
4388	B	394245
4389	B	396116
4390	B	395604
4391	B	397475
4392	B	396249
4393	B	398133
4394	B	396759
4395	B	398660
4396	B	397746
4397	B	399639
4398	B	398973
4399	B	400878
4400	B	399921
4401	B	401846
4402	B	400393
4403	B	402287
4404	B	401444
4405	B	403344
4406	B	402258
4407	B	404150
4408	B	403461
4409	B	405340
4410	B	405400
4411	B	407325
4412	B	404027
4413	B	405941
4414	B	406141
4415	B	408055
4416	B	407325
4417	B	409172
4418	B	409999
4419	B	411893

Substitute Sequence

SEQ ID	Or.	position
1230	F	15903
1231	F	14019
1232	F	17198
1233	F	15298
1234	F	18218
1235	F	16263
1236	F	20595
1237	F	18692
1238	F	21932
1239	F	19969
1240	F	22259
1241	F	20338
1242	F	22605
1243	F	20659
1244	F	22890
1245	F	20987
1246	F	23150
1247	F	21244
1248	F	24413
1249	F	22506
1250	F	26379
1251	F	24476
1252	F	27498
1253	F	25602
1254	F	28476
1255	F	26621
1256	F	29785
1257	F	27860
1258	F	30276
1259	F	28363
1260	F	31184
1261	F	29287
1262	F	31574
1263	F	29650

SEQ ID	Or.	position
2825	F	798866
2826	F	801800
2827	F	799847
2828	F	802561
2829	F	800732
2830	F	802881
2831	F	800926
2832	F	804088
2833	F	802162
2834	F	805071
2835	F	803150
2836	F	806224
2837	F	804333
2838	F	807742
2839	F	805907
2840	F	808860
2841	F	806959
2842	F	810074
2843	F	808209
2844	F	811442
2845	F	809555
2846	F	812088
2847	F	810158
2848	F	813225
2849	F	811336
2850	F	813512
2851	F	811473
2852	F	814095
2853	F	812185
2854	F	814173
2855	F	812276
2856	F	815188
2857	F	813268
2858	F	815897

SEQ ID	Or.	position
4420	B	411645
4421	B	413542
4422	B	413693
4423	B	415530
4424	B	413693
4425	B	415559
4426	B	414172
4427	B	416072
4428	B	415337
4429	B	417275
4430	B	414599
4431	B	416499
4432	B	416887
4433	B	418821
4434	B	417700
4435	B	419585
4436	B	418274
4437	B	420173
4438	B	418823
4439	B	420732
4440	B	419778
4441	B	421678
4442	B	420461
4443	B	422361
4444	B	421460
4445	B	423336
4446	B	422265
4447	B	424120
4448	B	423263
4449	B	425182
4450	B	425302
4451	B	427252
4452	B	426283
4453	B	428210

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SEQ ID	Or.	position
1264	F	33095
1265	F	31184
1266	F	33840
1267	F	31949
1268	F	34769
1269	F	32869
1270	F	34915
1271	F	32961
1272	F	35696
1273	F	33793
1274	F	36794
1275	F	34893
1276	F	37960
1277	F	36085
1278	F	38924
1279	F	37017
1280	F	39704
1281	F	37754
1282	F	40541
1283	F	38615
1284	F	41945
1285	F	40054
1286	F	42779
1287	F	40859
1288	F	43991
1289	F	42061
1290	F	45056
1291	F	43155
1292	F	45755
1293	F	43821
1294	F	46272
1295	F	44382
1296	F	46654
1297	F	44763

SEQ ID	Or.	position
2859	F	813968
2860	F	817367
2861	F	815456
2862	F	819089
2863	F	817201
2864	F	819482
2865	F	817563
2866	F	820143
2867	F	818252
2868	F	820800
2869	F	818900
2870	F	821426
2871	F	819500
2872	F	821943
2873	F	820003
2874	F	822811
2875	F	820926
2876	F	824117
2877	F	822214
2878	F	825659
2879	F	823747
2880	F	826112
2881	F	824151
2882	F	826773
2883	F	824894
2884	F	826945
2885	F	825061
2886	F	827754
2887	F	825869
2888	F	829117
2889	F	827236
2890	F	830870
2891	F	828917
2892	F	831522

SEQ ID	Or.	position
4454	B	427252
4455	B	429129
4456	B	428040
4457	B	429940
4458	B	430106
4459	B	432063
4460	B	430580
4461	B	432480
4462	B	430860
4463	B	432776
4464	B	432063
4465	B	433919
4466	B	432263
4467	B	434137
4468	B	434730
4469	B	436671
4470	B	436671
4471	B	438495
4472	B	436803
4473	B	438696
4474	B	437953
4475	B	439850
4476	B	438490
4477	B	440383
4478	B	439374
4479	B	441289
4480	B	439562
4481	B	441466
4482	B	439976
4483	B	441847
4484	B	441301
4485	B	443216
4486	B	442161
4487	B	444066

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SEQ ID	Or.	position
1298	F	47926
1299	F	46059
1300	F	48403
1301	F	46485
1302	F	49871
1303	F	47980
1304	F	50706
1305	F	48792
1306	F	52129
1307	F	50199
1308	F	53247
1309	F	51346
1310	F	54376
1311	F	52462
1312	F	54790
1313	F	52890
1314	F	55404
1315	F	53540
1316	F	56602
1317	F	54695
1318	F	58151
1319	F	56284
1320	F	58965
1321	F	57039
1322	F	59955
1323	F	58032
1324	F	61247
1325	F	59364
1326	F	62249
1327	F	60375
1328	F	63117
1329	F	61247
1330	F	63829
1331	F	61908

SEQ ID	Or.	position
2893	F	829613
2894	F	831995
2895	F	830093
2896	F	832585
2897	F	830686
2898	F	833149
2899	F	831240
2900	F	833660
2901	F	831704
2902	F	834442
2903	F	832539
2904	F	835147
2905	F	833252
2906	F	835536
2907	F	833656
2908	F	836378
2909	F	834480
2910	F	836990
2911	F	835067
2912	F	838512
2913	F	836603
2914	F	839718
2915	F	837811
2916	F	840211
2917	F	838266
2918	F	841434
2919	F	839485
2920	F	842250
2921	F	840377
2922	F	842761
2923	F	840912
2924	F	843000
2925	F	841103
2926	F	843583

SEQ ID	Or.	position
4488	B	442834
4489	B	444713
4490	B	446608
4491	B	448508
4492	B	448288
4493	B	450225
4494	B	449798
4495	B	451705
4496	B	451345
4497	B	453199
4498	B	451891
4499	B	453768
4500	B	452813
4501	B	454720
4502	B	453439
4503	B	455315
4504	B	455088
4505	B	456988
4506	B	455682
4507	B	457551
4508	B	456302
4509	B	458221
4510	B	457645
4511	B	459519
4512	B	458699
4513	B	460570
4514	B	459867
4515	B	461758
4516	B	461464
4517	B	463337
4518	B	461887
4519	B	463795
4520	B	462842
4521	B	464780

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SEQ ID	Or.	position
1332	F	64066
1333	F	62136
1334	F	64369
1335	F	62437
1336	F	65124
1337	F	63225
1338	F	67407
1339	F	65513
1340	F	68652
1341	F	66758
1342	F	68946
1343	F	67080
1344	F	69660
1345	F	67818
1346	F	70432
1347	F	68572
1348	F	70866
1349	F	68946
1350	F	73272
1351	F	71373
1352	F	74657
1353	F	72752
1354	F	75282
1355	F	73383
1356	F	76781
1357	F	74878
1358	F	76925
1359	F	75017
1360	F	77935
1361	F	76028
1362	F	79611
1363	F	77750
1364	F	82371
1365	F	80509

SEQ ID	Or.	position
2927	F	841683
2928	F	845985
2929	F	844098
2930	F	847919
2931	F	846025
2932	F	850011
2933	F	848109
2934	F	851442
2935	F	849547
2936	F	853479
2937	F	851567
2938	F	854701
2939	F	852801
2940	F	855197
2941	F	853282
2942	F	856012
2943	F	854111
2944	F	857227
2945	F	855326
2946	F	859309
2947	F	857458
2948	F	859418
2949	F	857515
2950	F	860468
2951	F	858583
2952	F	861361
2953	F	859441
2954	F	861872
2955	F	859979
2956	F	863352
2957	F	861444
2958	F	863777
2959	F	861872
2960	F	864636

SEQ ID	Or.	position
4522	B	464031
4523	B	465946
4524	B	464849
4525	B	466801
4526	B	466078
4527	B	467968
4528	B	467670
4529	B	469540
4530	B	469208
4531	B	471075
4532	B	469520
4533	B	471400
4534	B	469895
4535	B	471798
4536	B	471533
4537	B	473363
4538	B	471867
4539	B	473744
4540	B	473542
4541	B	475387
4542	B	473919
4543	B	475824
4544	B	474747
4545	B	476666
4546	B	475493
4547	B	477373
4548	B	476747
4549	B	478682
4550	B	478861
4551	B	480821
4552	B	479311
4553	B	481243
4554	B	479943
4555	B	481858

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SEQ ID	Or.	position
1366	F	83502
1367	F	81655
1368	F	84657
1369	F	82740
1370	F	87093
1371	F	85186
1372	F	87188
1373	F	85320
1374	F	88179
1375	F	86281
1376	F	88486
1377	F	86598
1378	F	89077
1379	F	87236
1380	F	89495
1381	F	87578
1382	F	91202
1383	F	89232
1384	F	91526
1385	F	89598
1386	F	92085
1387	F	90203
1388	F	93104
1389	F	91239
1390	F	93833
1391	F	91938
1392	F	94392
1393	F	92508
1394	F	97894
1395	F	95984
1396	F	98502
1397	F	96620
1398	F	100117
1399	F	98215

SEQ ID	Or.	position
2961	F	862792
2962	F	866084
2963	F	864184
2964	F	866443
2965	F	864500
2966	F	867576
2967	F	865673
2968	F	868841
2969	F	866960
2970	F	869050
2971	F	867150
2972	F	871062
2973	F	869138
2974	F	872210
2975	F	870310
2976	F	872497
2977	F	870597
2978	F	873141
2979	F	871236
2980	F	873800
2981	F	871909
2982	F	874558
2983	F	872648
2984	F	875521
2985	F	873612
2986	F	876781
2987	F	874848
2988	F	877657
2989	F	875727
2990	F	877935
2991	F	876044
2992	F	878633
2993	F	876695
2994	F	878886

SEQ ID	Or.	position
4556	B	480257
4557	B	482146
4558	B	481708
4559	B	483633
4560	B	481969
4561	B	483871
4562	B	483668
4563	B	485559
4564	B	485198
4565	B	487094
4566	B	488084
4567	B	489985
4568	B	485945
4569	B	487859
4570	B	489498
4571	B	491367
4572	B	488799
4573	B	490691
4574	B	490677
4575	B	492589
4576	B	492994
4577	B	494929
4578	B	493113
4579	B	495035
4580	B	493985
4581	B	495864
4582	B	494929
4583	B	496801
4584	B	495090
4585	B	496989
4586	B	495585
4587	B	497485
4588	B	495436
4589	B	497304

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SEQ ID	Or.	position
1400	F	101104
1401	F	99158
1402	F	101981
1403	F	100080
1404	F	102499
1405	F	100546
1406	F	104014
1407	F	102126
1408	F	105028
1409	F	103092
1410	F	107210
1411	F	105310
1412	F	108446
1413	F	106545
1414	F	108792
1415	F	106853
1416	F	109472
1417	F	107561
1418	F	111060
1419	F	109147
1420	F	112669
1421	F	110796
1422	F	113335
1423	F	111435
1424	F	113733
1425	F	111882
1426	F	114479
1427	F	112580
1428	F	115138
1429	F	113196
1430	F	115765
1431	F	113891
1432	F	119580
1433	F	117660

SEQ ID	Or.	position
2995	F	876963
2996	F	879824
2997	F	877933
2998	F	880670
2999	F	878769
3000	F	881719
3001	F	879824
3002	F	882682
3003	F	880774
3004	F	883432
3005	F	881540
3006	F	884263
3007	F	882357
3008	F	884947
3009	F	883044
3010	F	888721
3011	F	886762
3012	F	890084
3013	F	888182
3014	F	890897
3015	F	888996
3016	F	891749
3017	F	889830
3018	F	893136
3019	F	891228
3020	F	893415
3021	F	891471
3022	F	893591
3023	F	891684
3024	F	894005
3025	F	892127
3026	F	894827
3027	F	892900
3028	F	895732

SEQ ID	Or.	position
4590	B	496854
4591	B	498754
4592	B	497396
4593	B	499316
4594	B	498735
4595	B	500635
4596	B	499484
4597	B	501409
4598	B	501005
4599	B	502852
4600	B	501937
4601	B	503853
4602	B	503083
4603	B	505003
4604	B	503895
4605	B	505846
4606	B	505263
4607	B	507137
4608	B	507214
4609	B	509106
4610	B	507687
4611	B	509559
4612	B	508632
4613	B	510534
4614	B	508863
4615	B	510730
4616	B	509202
4617	B	511062
4618	B	510940
4619	B	512832
4620	B	511747
4621	B	513649
4622	B	512446
4623	B	514305

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SEQ ID	Or.	position
1434	F	123834
1435	F	121914
1436	F	124649
1437	F	122753
1438	F	125280
1439	F	123416
1440	F	126101
1441	F	124208
1442	F	126871
1443	F	125013
1444	F	127698
1445	F	125787
1446	F	129465
1447	F	127467
1448	F	130799
1449	F	128869
1450	F	131615
1451	F	129711
1452	F	132856
1453	F	130914
1454	F	133401
1455	F	131474
1456	F	133624
1457	F	131706
1458	F	134385
1459	F	132500
1460	F	137183
1461	F	135320
1462	F	140106
1463	F	138215
1464	F	140839
1465	F	138927
1466	F	141535
1467	F	139614

SEQ ID	Or.	position
3029	F	893790
3030	F	896823
3031	F	894907
3032	F	900571
3033	F	898639
3034	F	902407
3035	F	900507
3036	F	903243
3037	F	901346
3038	F	903616
3039	F	901726
3040	F	905486
3041	F	903589
3042	F	906234
3043	F	904350
3044	F	906774
3045	F	904846
3046	F	907868
3047	F	905924
3048	F	908501
3049	F	906583
3050	F	908975
3051	F	907079
3052	F	909351
3053	F	907456
3054	F	909835
3055	F	907957
3056	F	910382
3057	F	908496
3058	F	910693
3059	F	908829
3060	F	912169
3061	F	910248
3062	F	912376

SEQ ID	Or.	position
4624	B	513313
4625	B	515212
4626	B	514529
4627	B	516410
4628	B	515466
4629	B	517364
4630	B	515496
4631	B	517389
4632	B	516069
4633	B	517978
4634	B	516642
4635	B	518551
4636	B	517420
4637	B	519349
4638	B	518187
4639	B	520053
4640	B	518617
4641	B	520500
4642	B	519078
4643	B	520963
4644	B	519736
4645	B	521636
4646	B	520719
4647	B	522655
4648	B	522221
4649	B	524115
4650	B	522354
4651	B	524287
4652	B	523763
4653	B	525689
4654	B	524854
4655	B	526756
4656	B	525970
4657	B	527866

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SEQ ID	Or.	position
1468	F	142909
1469	F	140952
1470	F	143684
1471	F	141782
1472	F	144309
1473	F	142375
1474	F	146178
1475	F	144294
1476	F	146894
1477	F	144997
1478	F	147858
1479	F	145960
1480	F	148277
1481	F	146347
1482	F	148781
1483	F	146846
1484	F	148947
1485	F	147021
1486	F	149424
1487	F	147592
1488	F	150769
1489	F	148884
1490	F	151743
1491	F	149880
1492	F	152659
1493	F	150769
1494	F	153101
1495	F	151270
1496	F	153719
1497	F	151850
1498	F	155002
1499	F	153096
1500	F	156550
1501	F	154687

SEQ ID	Or.	position
3063	F	910476
3064	F	912984
3065	F	911084
3066	F	913437
3067	F	911545
3068	F	914282
3069	F	912376
3070	F	914925
3071	F	913023
3072	F	915394
3073	F	913510
3074	F	915827
3075	F	913912
3076	F	916683
3077	F	914788
3078	F	917347
3079	F	915438
3080	F	918089
3081	F	916189
3082	F	918399
3083	F	916506
3084	F	919296
3085	F	917406
3086	F	919457
3087	F	917598
3088	F	919864
3089	F	917963
3090	F	920641
3091	F	918711
3092	F	921029
3093	F	919138
3094	F	921239
3095	F	919366
3096	F	921526

SEQ ID	Or.	position
4658	B	526312
4659	B	528202
4660	B	526640
4661	B	528553
4662	B	526991
4663	B	528855
4664	B	528553
4665	B	530443
4666	B	529081
4667	B	530988
4668	B	529943
4669	B	531844
4670	B	530424
4671	B	532301
4672	B	530799
4673	B	532675
4674	B	531670
4675	B	533594
4676	B	533498
4677	B	535393
4678	B	534147
4679	B	535997
4680	B	534892
4681	B	536813
4682	B	536191
4683	B	538068
4684	B	539438
4685	B	541306
4686	B	540771
4687	B	542639
4688	B	541223
4689	B	543141
4690	B	542025
4691	B	543927

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SEQ ID	Or.	position
1502	F	157206
1503	F	155353
1504	F	158818
1505	F	156924
1506	F	159676
1507	F	157795
1508	F	160957
1509	F	159063
1510	F	161319
1511	F	159504
1512	F	162131
1513	F	160240
1514	F	162775
1515	F	160865
1516	F	164236
1517	F	162345
1518	F	165837
1519	F	163923
1520	F	166508
1521	F	164605
1522	F	168612
1523	F	166683
1524	F	169367
1525	F	167436
1526	F	170556
1527	F	168661
1528	F	171067
1529	F	169173
1530	F	172090
1531	F	170171
1532	F	172797
1533	F	170904
1534	F	174176
1535	F	172236

SEQ ID	Or.	position
3097	F	919638
3098	F	921930
3099	F	919979
3100	F	922212
3101	F	920325
3102	F	922925
3103	F	921029
3104	F	923258
3105	F	921324
3106	F	923808
3107	F	921929
3108	F	924185
3109	F	922311
3110	F	924680
3111	F	922764
3112	F	925111
3113	F	923258
3114	F	926538
3115	F	924638
3116	F	926972
3117	F	925072
3118	F	927351
3119	F	925415
3120	F	927870
3121	F	925924
3122	F	928974
3123	F	927031
3124	F	930003
3125	F	928103
3126	F	930383
3127	F	928402
3128	F	931084
3129	F	929222
3130	F	931307

SEQ ID	Or.	position
4692	B	543495
4693	B	545375
4694	B	544367
4695	B	546253
4696	B	544790
4697	B	546697
4698	B	544982
4699	B	546890
4700	B	546655
4701	B	548555
4702	B	547701
4703	B	549667
4704	B	547609
4705	B	549533
4706	B	548121
4707	B	550040
4708	B	548878
4709	B	550836
4710	B	549681
4711	B	551602
4712	B	550605
4713	B	552527
4714	B	551849
4715	B	553750
4716	B	553261
4717	B	555165
4718	B	555176
4719	B	557075
4720	B	556590
4721	B	558489
4722	B	557130
4723	B	559024
4724	B	558346
4725	B	560246

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SEQ ID	Or.	position
1536	F	175048
1537	F	173138
1538	F	175476
1539	F	173595
1540	F	177183
1541	F	175275
1542	F	177858
1543	F	175942
1544	F	179819
1545	F	177923
1546	F	180412
1547	F	178455
1548	F	181169
1549	F	179226
1550	F	182628
1551	F	180694
1552	F	183403
1553	F	181494
1554	F	184577
1555	F	182628
1556	F	185763
1557	F	183843
1558	F	186496
1559	F	184614
1560	F	187187
1561	F	185262
1562	F	188542
1563	F	186632
1564	F	189410
1565	F	187514
1566	F	190016
1567	F	188083
1568	F	190545
1569	F	188666

SEQ ID	Or.	position
3131	F	929397
3132	F	931824
3133	F	929927
3134	F	932352
3135	F	930470
3136	F	933044
3137	F	931084
3138	F	933303
3139	F	931396
3140	F	933626
3141	F	931686
3142	F	934320
3143	F	932412
3144	F	936427
3145	F	934508
3146	F	938309
3147	F	936402
3148	F	939110
3149	F	937204
3150	F	940791
3151	F	938889
3152	F	941806
3153	F	939906
3154	F	944314
3155	F	942412
3156	F	944987
3157	F	943090
3158	F	946072
3159	F	944166
3160	F	946877
3161	F	944986
3162	F	948258
3163	F	946403
3164	F	949037

SEQ ID	Or.	position
4726	B	558455
4727	B	560376
4728	B	559450
4729	B	561362
4730	B	561581
4731	B	563478
4732	B	563153
4733	B	565073
4734	B	564319
4735	B	566220
4736	B	564201
4737	B	566078
4738	B	567243
4739	B	569143
4740	B	568192
4741	B	570133
4742	B	570619
4743	B	572532
4744	B	572241
4745	B	574208
4746	B	572994
4747	B	574916
4748	B	573744
4749	B	575640
4750	B	573679
4751	B	575571
4752	B	574398
4753	B	576288
4754	B	574677
4755	B	576633
4756	B	575033
4757	B	576922
4758	B	575482
4759	B	577363

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SEQ ID	Or.	position
1570	F	191538
1571	F	189595
1572	F	192173
1573	F	190247
1574	F	193015
1575	F	191135
1576	F	194471
1577	F	192522
1578	F	194946
1579	F	193015
1580	F	196798
1581	F	194896
1582	F	197440
1583	F	195550
1584	F	197440
1585	F	195549
1586	F	198736
1587	F	196802
1588	F	199722
1589	F	197822
1590	F	200003
1591	F	198147
1592	F	200361
1593	F	198453
1594	F	200945
1595	F	199009
1596	F	202122
1597	F	200215
1598	F	203251
1599	F	201352
1600	F	203807
1601	F	201903
1602	F	206555
1603	F	204669

SEQ ID	Or.	position
3165	F	947137
3166	F	949581
3167	F	947671
3168	F	950455
3169	F	948558
3170	F	951058
3171	F	949151
3172	F	951569
3173	F	949653
3174	F	953340
3175	F	951431
3176	F	954174
3177	F	952288
3178	F	955475
3179	F	953604
3180	F	957601
3181	F	955703
3182	F	959053
3183	F	957168
3184	F	960824
3185	F	958932
3186	F	961268
3187	F	959368
3188	F	961365
3189	F	959465
3190	F	962324
3191	F	960423
3192	F	964706
3193	F	962822
3194	F	965974
3195	F	964074
3196	F	967210
3197	F	965307
3198	F	967808

SEQ ID	Or.	position
4760	B	575699
4761	B	577606
4762	B	576078
4763	B	577993
4764	B	578265
4765	B	580143
4766	B	578948
4767	B	580848
4768	B	582336
4769	B	584225
4770	B	582917
4771	B	584817
4772	B	583359
4773	B	585252
4774	B	583734
4775	B	585634
4776	B	584122
4777	B	585990
4778	B	584665
4779	B	586598
4780	B	585213
4781	B	587123
4782	B	585517
4783	B	587434
4784	B	586850
4785	B	588730
4786	B	588017
4787	B	589878
4788	B	589628
4789	B	591543
4790	B	589798
4791	B	591723
4792	B	590323
4793	B	592211

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SEQ ID	Or.	position
1604	F	207269
1605	F	205369
1606	F	208293
1607	F	206395
1608	F	209252
1609	F	207345
1610	F	210330
1611	F	208414
1612	F	210632
1613	F	208694
1614	F	211151
1615	F	209255
1616	F	212650
1617	F	210756
1618	F	213920
1619	F	212036
1620	F	214535
1621	F	212635
1622	F	215003
1623	F	213077
1624	F	216641
1625	F	214772
1626	F	216869
1627	F	214961
1628	F	218145
1629	F	216218
1630	F	218461
1631	F	216576
1632	F	218960
1633	F	217044
1634	F	219646
1635	F	217772
1636	F	220257
1637	F	218379

SEQ ID	Or.	position
3199	F	965925
3200	F	969286
3201	F	967320
3202	F	970802
3203	F	968888
3204	F	972169
3205	F	970269
3206	F	973487
3207	F	971616
3208	F	974339
3209	F	972408
3210	F	974988
3211	F	973035
3212	F	976035
3213	F	974114
3214	F	976367
3215	F	974411
3216	F	976665
3217	F	974730
3218	F	977439
3219	F	975500
3220	F	977698
3221	F	975799
3222	F	978389
3223	F	976478
3224	F	978665
3225	F	976760
3226	F	979134
3227	F	977270
3228	F	979473
3229	F	977592
3230	F	980915
3231	F	979026
3232	F	982043

SEQ ID	Or.	position
4794	B	591492
4795	B	593419
4796	B	593002
4797	B	594885
4798	B	593367
4799	B	595321
4800	B	594166
4801	B	596020
4802	B	595942
4803	B	597826
4804	B	596354
4805	B	598255
4806	B	597147
4807	B	598998
4808	B	597960
4809	B	599851
4810	B	601068
4811	B	602929
4812	B	602096
4813	B	603996
4814	B	603761
4815	B	605643
4816	B	604014
4817	B	605920
4818	B	604634
4819	B	606548
4820	B	605864
4821	B	607736
4822	B	606903
4823	B	608742
4824	B	607722
4825	B	609674
4826	B	609329
4827	B	611215

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SEQ ID	Or.	position
1638	F	220903
1639	F	218989
1640	F	221314
1641	F	219470
1642	F	222253
1643	F	220338
1644	F	223186
1645	F	221278
1646	F	223994
1647	F	222146
1648	F	224908
1649	F	223014
1650	F	225051
1651	F	223131
1652	F	225510
1653	F	223615
1654	F	226550
1655	F	224609
1656	F	226928
1657	F	225029
1658	F	227528
1659	F	225631
1660	F	228388
1661	F	226475
1662	F	229930
1663	F	228032
1664	F	231129
1665	F	229205
1666	F	232785
1667	F	230915
1668	F	233561
1669	F	231664
1670	F	234013
1671	F	232149

SEQ ID	Or.	position
3233	F	980178
3234	F	983628
3235	F	981736
3236	F	984149
3237	F	982271
3238	F	985180
3239	F	983280
3240	F	985815
3241	F	983882
3242	F	986458
3243	F	984547
3244	F	987340
3245	F	985462
3246	F	987686
3247	F	985815
3248	F	988559
3249	F	986670
3250	F	989455
3251	F	987558
3252	F	993122
3253	F	991289
3254	F	993186
3255	F	991297
3256	F	993650
3257	F	991727
3258	F	994007
3259	F	992107
3260	F	995743
3261	F	993915
3262	F	996663
3263	F	994763
3264	F	998586
3265	F	996755
3266	F	999153

SEQ ID	Or.	position
4828	B	609916
4829	B	611866
4830	B	612090
4831	B	613998
4832	B	613166
4833	B	615091
4834	B	613838
4835	B	615761
4836	B	614217
4837	B	616094
4838	B	615464
4839	B	617391
4840	B	615913
4841	B	617803
4842	B	617932
4843	B	619837
4844	B	618598
4845	B	620532
4846	B	619591
4847	B	621465
4848	B	620636
4849	B	622536
4850	B	620532
4851	B	622381
4852	B	621404
4853	B	623307
4854	B	621932
4855	B	623834
4856	B	622666
4857	B	624588
4858	B	623689
4859	B	625605
4860	B	624435
4861	B	626298

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SEQ ID	Or.	position
1672	F	234942
1673	F	233061
1674	F	236015
1675	F	234123
1676	F	237945
1677	F	236045
1678	F	238482
1679	F	236599
1680	F	240094
1681	F	238190
1682	F	241713
1683	F	239820
1684	F	242569
1685	F	240653
1686	F	244253
1687	F	242360
1688	F	245693
1689	F	243796
1690	F	246762
1691	F	244825
1692	F	247498
1693	F	245575
1694	F	248343
1695	F	246444
1696	F	249500
1697	F	247625
1698	F	250315
1699	F	248425
1700	F	250832
1701	F	248942
1702	F	251847
1703	F	249939
1704	F	254897
1705	F	252955

SEQ ID	Or.	position
3267	F	997253
3268	F	1000967
3269	F	999092
3270	F	1001173
3271	F	999246
3272	F	1001604
3273	F	999645
3274	F	1004159
3275	F	1002326
3276	F	1004763
3277	F	1002871
3278	F	1005160
3279	F	1003235
3280	F	1007181
3281	F	1005250
3282	F	1007561
3283	F	1005665
3284	F	1008855
3285	F	1007002
3286	F	1010205
3287	F	1008342
3288	F	1011716
3289	F	1009823
3290	F	1011812
3291	F	1009914
3292	F	1012372
3293	F	1010385
3294	F	1012567
3295	F	1010624
3296	F	1013237
3297	F	1011337
3298	F	1013690
3299	F	1011856
3300	F	1014301

SEQ ID	Or.	position
4862	B	625204
4863	B	627128
4864	B	626885
4865	B	628790
4866	B	627128
4867	B	629026
4868	B	628073
4869	B	629983
4870	B	628359
4871	B	630267
4872	B	628976
4873	B	630850
4874	B	630023
4875	B	631988
4876	B	630642
4877	B	632526
4878	B	631205
4879	B	633081
4880	B	632046
4881	B	633969
4882	B	638311
4883	B	640204
4884	B	640448
4885	B	642328
4886	B	643695
4887	B	645639
4888	B	640847
4889	B	642769
4890	B	644745
4891	B	646615
4892	B	645686
4893	B	647558
4894	B	646060
4895	B	647972

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SEQ ID	Or.	position
1706	F	256543
1707	F	254643
1708	F	257692
1709	F	255790
1710	F	258561
1711	F	256651
1712	F	258927
1713	F	257036
1714	F	261368
1715	F	259469
1716	F	263887
1717	F	262000
1718	F	264503
1719	F	262599
1720	F	265364
1721	F	263512
1722	F	266202
1723	F	264277
1724	F	266709
1725	F	264801
1726	F	267847
1727	F	265947
1728	F	267980
1729	F	266077
1730	F	268271
1731	F	266341
1732	F	269840
1733	F	267913
1734	F	270961
1735	F	269072
1736	F	271883
1737	F	270080
1738	F	272642
1739	F	270748

SEQ ID	Or.	position
3301	F	1012396
3302	F	1014926
3303	F	1013010
3304	F	1015664
3305	F	1013820
3306	F	1017026
3307	F	1015099
3308	F	1017674
3309	F	1015786
3310	F	1018353
3311	F	1016460
3312	F	1019602
3313	F	1017674
3314	F	1019876
3315	F	1017948
3316	F	1020853
3317	F	1018956
3318	F	1021878
3319	F	1019972
3320	F	1023054
3321	F	1021186
3322	F	1023415
3323	F	1021579
3324	F	1023748
3325	F	1021850
3326	F	1024485
3327	F	1022574
3328	F	1024744
3329	F	1022836
3330	F	1025618
3331	F	1023720
3332	F	1026323
3333	F	1024403
3334	F	1027710

SEQ ID	Or.	position
4896	B	647331
4897	B	649231
4898	B	649987
4899	B	651829
4900	B	650580
4901	B	652484
4902	B	651942
4903	B	653852
4904	B	652395
4905	B	654310
4906	B	653132
4907	B	655028
4908	B	653827
4909	B	655713
4910	B	662071
4911	B	664023
4912	B	662543
4913	B	664403
4914	B	663295
4915	B	665205
4916	B	663972
4917	B	665850
4918	B	664432
4919	B	666332
4920	B	665860
4921	B	667789
4922	B	666312
4923	B	668233
4924	B	666652
4925	B	668550
4926	B	668338
4927	B	670238
4928	B	668605
4929	B	670495

sequence search

SEQ ID	Or.	position
1740	F	273367
1741	F	271477
1742	F	274562
1743	F	272702
1744	F	275882
1745	F	273984
1746	F	278004
1747	F	276149
1748	F	278747
1749	F	276893
1750	F	279521
1751	F	277632
1752	F	281076
1753	F	279118
1754	F	281551
1755	F	279668
1756	F	282573
1757	F	280663
1758	F	284229
1759	F	282316
1760	F	284598
1761	F	282655
1762	F	285418
1763	F	283518
1764	F	286104
1765	F	284229
1766	F	286456
1767	F	284531
1768	F	287865
1769	F	286008
1770	F	289163
1771	F	287384
1772	F	290609
1773	F	288709

SEQ ID	Or.	position
3335	F	1025809
3336	F	1030272
3337	F	1028389
3338	F	1031486
3339	F	1029602
3340	F	1033215
3341	F	1031334
3342	F	1035425
3343	F	1033555
3344	F	1035956
3345	F	1034055
3346	F	1036748
3347	F	1034844
3348	F	16372
3349	F	14463
3350	F	31184
3351	F	29287
3352	F	56283
3353	F	54383
3354	F	56384
3355	F	54538
3356	F	64528
3357	F	62600
3358	F	72965
3359	F	71054
3360	F	78245
3361	F	76347
3362	F	79133
3363	F	77291
3364	F	81740
3365	F	79840
3366	F	86772
3367	F	84880
3368	F	109188

SEQ ID	Or.	position
4930	B	668690
4931	B	670590
4932	B	669766
4933	B	671653
4934	B	670160
4935	B	672109
4936	B	671000
4937	B	672900
4938	B	671470
4939	B	673412
4940	B	672685
4941	B	674567
4942	B	673461
4943	B	675365
4944	B	674786
4945	B	676682
4946	B	675456
4947	B	677375
4948	B	676683
4949	B	678594
4950	B	677334
4951	B	679183
4952	B	678726
4953	B	680596
4954	B	679729
4955	B	681628
4956	B	680747
4957	B	682668
4958	B	681500
4959	B	683406
4960	B	682779
4961	B	684716
4962	B	683320
4963	B	685249

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SEQ ID	Or.	position
1774	F	291264
1775	F	289389
1776	F	292107
1777	F	290166
1778	F	293099
1779	F	291211
1780	F	294791
1781	F	292883
1782	F	295464
1783	F	293573
1784	F	296018
1785	F	294095
1786	F	297572
1787	F	295664
1788	F	298686
1789	F	296716
1790	F	300305
1791	F	298407
1792	F	301852
1793	F	299946
1794	F	304754
1795	F	302849
1796	F	305854
1797	F	303992
1798	F	306214
1799	F	304303
1800	F	306758
1801	F	304856
1802	F	309057
1803	F	307125
1804	F	309635
1805	F	307750
1806	F	310491
1807	F	308597

SEQ ID	Or.	position
3369	F	107337
3370	F	111132
3371	F	109188
3372	F	111505
3373	F	109597
3374	F	112432
3375	F	110462
3376	F	113446
3377	F	111592
3378	F	120225
3379	F	118303
3380	F	124892
3381	F	123004
3382	F	131327
3383	F	129485
3384	F	143944
3385	F	142043
3386	F	150138
3387	F	148247
3388	F	163715
3389	F	161804
3390	F	165186
3391	F	163274
3392	F	168143
3393	F	166302
3394	F	170287
3395	F	168387
3396	F	176838
3397	F	174996
3398	F	187776
3399	F	185900
3400	F	188083
3401	F	186208
3402	F	190117

SEQ ID	Or.	position
4964	B	684716
4965	B	686585
4966	B	685010
4967	B	686897
4968	B	686423
4969	B	688323
4970	B	687426
4971	B	689324
4972	B	688619
4973	B	690482
4974	B	688653
4975	B	690563
4976	B	689836
4977	B	691775
4978	B	690186
4979	B	692088
4980	B	690715
4981	B	692616
4982	B	690937
4983	B	692837
4984	B	692091
4985	B	693991
4986	B	694171
4987	B	696078
4988	B	695197
4989	B	697093
4990	B	697486
4991	B	699428
4992	B	698313
4993	B	700238
4994	B	698646
4995	B	700515
4996	B	700337
4997	B	702249

6006 F 5251 6250

SEQ ID	Or.	position
1808	F	311753
1809	F	309790
1810	F	313188
1811	F	311292
1812	F	314121
1813	F	312194
1814	F	314489
1815	F	312539
1816	F	315431
1817	F	313526
1818	F	316309
1819	F	314380
1820	F	317102
1821	F	315214
1822	F	317271
1823	F	315343
1824	F	317380
1825	F	315480
1826	F	318256
1827	F	316352
1828	F	319047
1829	F	317181
1830	F	320325
1831	F	318338
1832	F	321228
1833	F	319366
1834	F	321676
1835	F	319782
1836	F	322066
1837	F	320097
1838	F	322910
1839	F	320982
1840	F	324744
1841	F	322849

SEQ ID	Or.	position
3403	F	188168
3404	F	196802
3405	F	194946
3406	F	210685
3407	F	208785
3408	F	234633
3409	F	232727
3410	F	236682
3411	F	234794
3412	F	249227
3413	F	247310
3414	F	252939
3415	F	251036
3416	F	253406
3417	F	251562
3418	F	271365
3419	F	269466
3420	F	275390
3421	F	273489
3422	F	277681
3423	F	275765
3424	F	282260
3425	F	280357
3426	F	292925
3427	F	291054
3428	F	302910
3429	F	301032
3430	F	308746
3431	F	306806
3432	F	311994
3433	F	310073
3434	F	312375
3435	F	310483
3436	F	312531

SEQ ID	Or.	position
4998	B	701115
4999	B	703015
5000	B	702385
5001	B	704285
5002	B	703636
5003	B	705561
5004	B	705271
5005	B	707136
5006	B	705875
5007	B	707725
5008	B	706444
5009	B	708279
5010	B	706741
5011	B	708673
5012	B	708324
5013	B	710226
5014	B	708673
5015	B	710518
5016	B	708876
5017	B	710791
5018	B	710498
5019	B	712447
5020	B	711435
5021	B	713354
5022	B	712993
5023	B	714887
5024	B	713686
5025	B	715574
5026	B	714474
5027	B	716354
5028	B	714867
5029	B	716760
5030	B	716047
5031	B	717877

Sequence Listing

SEQ ID	Or.	position
1842	F	325392
1843	F	323445
1844	F	326217
1845	F	324331
1846	F	327038
1847	F	325162
1848	F	327957
1849	F	326079
1850	F	328458
1851	F	326612
1852	F	329032
1853	F	327173
1854	F	329329
1855	F	327489
1856	F	330446
1857	F	328551
1858	F	330915
1859	F	329032
1860	F	331410
1861	F	329602
1862	F	332534
1863	F	330626
1864	F	332782
1865	F	330879
1866	F	333587
1867	F	331632
1868	F	333870
1869	F	331962
1870	F	334510
1871	F	332594
1872	F	334958
1873	F	333049
1874	F	334958
1875	F	333049

SEQ ID	Or.	position
3437	F	310647
3438	F	319923
3439	F	318009
3440	F	339991
3441	F	338104
3442	F	352535
3443	F	350653
3444	F	373218
3445	F	371320
3446	F	376994
3447	F	375085
3448	F	378954
3449	F	377011
3450	F	394604
3451	F	392704
3452	F	400915
3453	F	398972
3454	F	409744
3455	F	407904
3456	F	411155
3457	F	409253
3458	F	414197
3459	F	412281
3460	F	422638
3461	F	420770
3462	F	427595
3463	F	425701
3464	F	428453
3465	F	426553
3466	F	442272
3467	F	440364
3468	F	443303
3469	F	441380
3470	F	442939

SEQ ID	Or.	position
5032	B	716086
5033	B	717976
5034	B	717189
5035	B	719068
5036	B	718624
5037	B	720503
5038	B	719083
5039	B	720983
5040	B	720047
5041	B	722004
5042	B	720503
5043	B	722393
5044	B	720753
5045	B	722653
5046	B	721798
5047	B	723724
5048	B	722631
5049	B	724493
5050	B	723468
5051	B	725376
5052	B	724852
5053	B	726743
5054	B	726005
5055	B	727903
5056	B	726779
5057	B	728691
5058	B	727058
5059	B	728947
5060	B	727727
5061	B	729613
5062	B	728224
5063	B	730116
5064	B	729048
5065	B	730907

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SEQ ID	Or.	position
1876	F	335655
1877	F	333766
1878	F	336117
1879	F	334219
1880	F	337108
1881	F	335210
1882	F	340251
1883	F	338372
1884	F	341538
1885	F	339662
1886	F	341953
1887	F	339995
1888	F	342348
1889	F	340450
1890	F	343112
1891	F	341242
1892	F	343736
1893	F	341811
1894	F	344117
1895	F	342207
1896	F	344940
1897	F	343000
1898	F	345837
1899	F	343958
1900	F	346872
1901	F	344994
1902	F	347910
1903	F	345971
1904	F	350124
1905	F	348298
1906	F	351095
1907	F	349167
1908	F	351996
1909	F	350122

SEQ ID	Or.	position
3471	F	441047
3472	F	445572
3473	F	443707
3474	F	467757
3475	F	465801
3476	F	471583
3477	F	469712
3478	F	487813
3479	F	485913
3480	F	496852
3481	F	494952
3482	F	499979
3483	F	498074
3484	F	508715
3485	F	506798
3486	F	510584
3487	F	508632
3488	F	526255
3489	F	524350
3490	F	531098
3491	F	529150
3492	F	556575
3493	F	554706
3494	F	564318
3495	F	562390
3496	F	566692
3497	F	564838
3498	F	570033
3499	F	568150
3500	F	570844
3501	F	568915
3502	F	575571
3503	F	573671
3504	F	590045

SEQ ID	Or.	position
5066	B	729566
5067	B	731468
5068	B	732909
5069	B	734770
5070	B	734663
5071	B	736569
5072	B	735879
5073	B	737785
5074	B	736724
5075	B	738632
5076	B	737474
5077	B	739421
5078	B	738007
5079	B	739907
5080	B	738911
5081	B	740799
5082	B	739960
5083	B	741908
5084	B	742277
5085	B	744187
5086	B	743089
5087	B	744989
5088	B	743603
5089	B	745539
5090	B	744565
5091	B	746432
5092	B	744977
5093	B	746867
5094	B	745249
5095	B	747138
5096	B	745777
5097	B	747677
5098	B	746632
5099	B	748532

Sequence Search

SEQ ID	Or.	position
1910	F	353051
1911	F	351186
1912	F	353413
1913	F	351481
1914	F	353908
1915	F	351996
1916	F	354723
1917	F	352799
1918	F	356466
1919	F	354569
1920	F	357107
1921	F	355178
1922	F	357767
1923	F	355878
1924	F	360528
1925	F	358628
1926	F	360877
1927	F	358974
1928	F	361573
1929	F	359692
1930	F	362584
1931	F	360681
1932	F	363835
1933	F	361966
1934	F	364960
1935	F	363021
1936	F	365240
1937	F	363360
1938	F	367060
1939	F	365115
1940	F	368383
1941	F	366505
1942	F	368862
1943	F	366963

SEQ ID	Or.	position
3505	F	588196
3506	F	597631
3507	F	595698
3508	F	606387
3509	F	604507
3510	F	607566
3511	F	605637
3512	F	609842
3513	F	607958
3514	F	632472
3515	F	630572
3516	F	636994
3517	F	635071
3518	F	649681
3519	F	647800
3520	F	652059
3521	F	650101
3522	F	654522
3523	F	652562
3524	F	660587
3525	F	658691
3526	F	676785
3527	F	674938
3528	F	679031
3529	F	677133
3530	F	731967
3531	F	730091
3532	F	741797
3533	F	739935
3534	F	758555
3535	F	756641
3536	F	760010
3537	F	758082
3538	F	770670

SEQ ID	Or.	position
5100	B	747054
5101	B	748893
5102	B	748519
5103	B	750396
5104	B	749186
5105	B	751108
5106	B	749646
5107	B	751546
5108	B	749922
5109	B	751824
5110	B	750260
5111	B	752151
5112	B	752527
5113	B	754427
5114	B	753169
5115	B	755064
5116	B	755004
5117	B	756843
5118	B	757034
5119	B	758991
5120	B	758532
5121	B	760452
5122	B	758911
5123	B	760841
5124	B	760015
5125	B	761913
5126	B	760463
5127	B	762363
5128	B	760782
5129	B	762671
5130	B	762053
5131	B	763911
5132	B	762363
5133	B	764264

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SEQ ID	Or.	position
1944	F	370513
1945	F	368631
1946	F	370974
1947	F	369076
1948	F	372891
1949	F	370980
1950	F	373395
1951	F	371495
1952	F	374005
1953	F	372033
1954	F	374474
1955	F	372572
1956	F	376509
1957	F	374624
1958	F	377630
1959	F	375708
1960	F	378384
1961	F	376507
1962	F	378798
1963	F	376871
1964	F	379413
1965	F	377501
1966	F	379890
1967	F	377989
1968	F	381241
1969	F	379348
1970	F	382485
1971	F	380579
1972	F	383395
1973	F	381536
1974	F	383730
1975	F	381782
1976	F	384948
1977	F	383057

SEQ ID	Or.	position
3539	F	768751
3540	F	771896
3541	F	769996
3542	F	787857
3543	F	785958
3544	F	815714
3545	F	813840
3546	F	846380
3547	F	844470
3548	F	867576
3549	F	865673
3550	F	875167
3551	F	873254
3552	F	876214
3553	F	874314
3554	F	884093
3555	F	882162
3556	F	891248
3557	F	889348
3558	F	900125
3559	F	898298
3560	F	902048
3561	F	900125
3562	F	907563
3563	F	905656
3564	F	912076
3565	F	910133
3566	F	935157
3567	F	933211
3568	F	946473
3569	F	944568
3570	F	952562
3571	F	950664
3572	F	965649

SEQ ID	Or.	position
5134	B	763203
5135	B	765107
5136	B	764690
5137	B	766595
5138	B	765107
5139	B	766977
5140	B	766327
5141	B	768221
5142	B	766932
5143	B	768851
5144	B	768314
5145	B	770221
5146	B	769045
5147	B	770945
5148	B	770315
5149	B	772234
5150	B	770705
5151	B	772598
5152	B	770882
5153	B	772781
5154	B	771156
5155	B	773044
5156	B	772234
5157	B	774148
5158	B	773611
5159	B	775511
5160	B	774513
5161	B	776404
5162	B	776333
5163	B	778191
5164	B	777926
5165	B	779832
5166	B	777455
5167	B	779380

Substitution

SEQ ID	Or.	position
1978	F	385474
1979	F	383532
1980	F	385908
1981	F	384008
1982	F	386643
1983	F	384750
1984	F	387099
1985	F	385204
1986	F	387581
1987	F	385677
1988	F	388009
1989	F	386062
1990	F	388927
1991	F	387033
1992	F	389726
1993	F	387821
1994	F	391295
1995	F	389365
1996	F	392171
1997	F	390291
1998	F	393930
1999	F	392014
2000	F	395085
2001	F	393185
2002	F	395827
2003	F	393940
2004	F	396274
2005	F	394423
2006	F	397156
2007	F	395216
2008	F	398641
2009	F	396790
2010	F	399550
2011	F	397659

SEQ ID	Or.	position
3573	F	963730
3574	F	968519
3575	F	966614
3576	F	970497
3577	F	968601
3578	F	971879
3579	F	970043
3580	F	972888
3581	F	970962
3582	F	998162
3583	F	996241
3584	F	1003657
3585	F	1001756
3586	F	1009313
3587	F	1007413
3588	F	1028954
3589	F	1027039
3590	B	730
3591	B	2645
3592	B	3521
3593	B	5431
3594	B	5295
3595	B	7188
3596	B	6740
3597	B	8652
3598	B	8240
3599	B	10138
3600	B	8959
3601	B	10816
3602	B	9285
3603	B	11160
3604	B	9689
3605	B	11591
3606	B	10679

SEQ ID	Or.	position
5168	B	779476
5169	B	781342
5170	B	781774
5171	B	783686
5172	B	782667
5173	B	784562
5174	B	785748
5175	B	787658
5176	B	786222
5177	B	788126
5178	B	786803
5179	B	788703
5180	B	787998
5181	B	789876
5182	B	788279
5183	B	790255
5184	B	790369
5185	B	792247
5186	B	790862
5187	B	792787
5188	B	792247
5189	B	794137
5190	B	793352
5191	B	795215
5192	B	794276
5193	B	796196
5194	B	795215
5195	B	797077
5196	B	795667
5197	B	797571
5198	B	796515
5199	B	798382
5200	B	797235
5201	B	799168

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SEQ ID	Or.	position
2012	F	399797
2013	F	397915
2014	F	401527
2015	F	399623
2016	F	401907
2017	F	399960
2018	F	403017
2019	F	401131
2020	F	403017
2021	F	401131
2022	F	404910
2023	F	403010
2024	F	405728
2025	F	403836
2026	F	406837
2027	F	404932
2028	F	410291
2029	F	408347
2030	F	411488
2031	F	409518
2032	F	412379
2033	F	410487
2034	F	413164
2035	F	411263
2036	F	413606
2037	F	411626
2038	F	413721
2039	F	411859
2040	F	414921
2041	F	413049
2042	F	416517
2043	F	414606
2044	F	417445
2045	F	415557

SEQ ID	Or.	position
3607	B	12568
3608	B	11515
3609	B	13376
3610	B	12136
3611	B	14038
3612	B	13565
3613	B	15450
3614	B	14667
3615	B	16535
3616	B	15254
3617	B	17183
3618	B	16189
3619	B	18097
3620	B	16790
3621	B	18621
3622	B	16710
3623	B	18587
3624	B	18458
3625	B	20318
3626	B	20768
3627	B	22647
3628	B	22438
3629	B	24335
3630	B	22892
3631	B	24752
3632	B	23046
3633	B	24924
3634	B	23442
3635	B	25313
3636	B	23623
3637	B	25528
3638	B	24822
3639	B	26708
3640	B	26618

SEQ ID	Or.	position
5202	B	797585
5203	B	799553
5204	B	798102
5205	B	799976
5206	B	798306
5207	B	800214
5208	B	798662
5209	B	800546
5210	B	799168
5211	B	801074
5212	B	800159
5213	B	802054
5214	B	801153
5215	B	803031
5216	B	802363
5217	B	804257
5218	B	802893
5219	B	804802
5220	B	803466
5221	B	805366
5222	B	804440
5223	B	806374
5224	B	805576
5225	B	807523
5226	B	806511
5227	B	808410
5228	B	808305
5229	B	810207
5230	B	809229
5231	B	811164
5232	B	810700
5233	B	812581
5234	B	811825
5235	B	813787

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SEQ ID	Or.	position
2046	F	417812
2047	F	415912
2048	F	418381
2049	F	416517
2050	F	419453
2051	F	417447
2052	F	420026
2053	F	418068
2054	F	421270
2055	F	419392
2056	F	422262
2057	F	420364
2058	F	423007
2059	F	421107
2060	F	424834
2061	F	423018
2062	F	426026
2063	F	424110
2064	F	426883
2065	F	425040
2066	F	429303
2067	F	427438
2068	F	429609
2069	F	427737
2070	F	430104
2071	F	428191
2072	F	430622
2073	F	428814
2074	F	431439
2075	F	429537
2076	F	431968
2077	F	430108
2078	F	434401
2079	F	432485

SEQ ID	Or.	position
3641	B	28544
3642	B	27972
3643	B	29859
3644	B	29000
3645	B	30908
3646	B	30242
3647	B	32160
3648	B	30966
3649	B	32849
3650	B	31516
3651	B	33401
3652	B	32032
3653	B	33900
3654	B	33576
3655	B	35496
3656	B	34121
3657	B	36052
3658	B	35251
3659	B	37164
3660	B	35588
3661	B	37502
3662	B	36152
3663	B	38041
3664	B	37216
3665	B	39127
3666	B	38041
3667	B	39980
3668	B	39322
3669	B	41205
3670	B	40161
3671	B	42074
3672	B	40985
3673	B	42887
3674	B	42284

SEQ ID	Or.	position
5236	B	812574
5237	B	814467
5238	B	813787
5239	B	815676
5240	B	814082
5241	B	815892
5242	B	814571
5243	B	816454
5244	B	815441
5245	B	817347
5246	B	815101
5247	B	817025
5248	B	815953
5249	B	817887
5250	B	817709
5251	B	819618
5252	B	819559
5253	B	821442
5254	B	819933
5255	B	821846
5256	B	820622
5257	B	822548
5258	B	821281
5259	B	823181
5260	B	821778
5261	B	823666
5262	B	822494
5263	B	824387
5264	B	823155
5265	B	825057
5266	B	824589
5267	B	826509
5268	B	826122
5269	B	828041

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SEQ ID	Or.	position
2080	F	436050
2081	F	434134
2082	F	436342
2083	F	434428
2084	F	437672
2085	F	435775
2086	F	438051
2087	F	436165
2088	F	438767
2089	F	436866
2090	F	439139
2091	F	437145
2092	F	439479
2093	F	437574
2094	F	440823
2095	F	438923
2096	F	441668
2097	F	439746
2098	F	444271
2099	F	442371
2100	F	446233
2101	F	444302
2102	F	447687
2103	F	445803
2104	F	450318
2105	F	448399
2106	F	450876
2107	F	449025
2108	F	451274
2109	F	449397
2110	F	452413
2111	F	450513
2112	F	453303
2113	F	451427

SEQ ID	Or.	position
3675	B	44180
3676	B	43337
3677	B	45275
3678	B	44022
3679	B	45927
3680	B	45451
3681	B	47375
3682	B	46308
3683	B	48208
3684	B	46560
3685	B	48485
3686	B	47115
3687	B	49053
3688	B	48208
3689	B	50118
3690	B	48806
3691	B	50708
3692	B	50333
3693	B	52220
3694	B	50960
3695	B	52890
3696	B	52660
3697	B	54606
3698	B	53737
3699	B	55645
3700	B	54793
3701	B	56691
3702	B	55329
3703	B	57226
3704	B	56691
3705	B	58566
3706	B	56317
3707	B	58226
3708	B	58469

SEQ ID	Or.	position
5270	B	826572
5271	B	828500
5272	B	827246
5273	B	829208
5274	B	827489
5275	B	829407
5276	B	828274
5277	B	830176
5278	B	829495
5279	B	831395
5280	B	831192
5281	B	833082
5282	B	832005
5283	B	833870
5284	B	832373
5285	B	834280
5286	B	832964
5287	B	834864
5288	B	833672
5289	B	835604
5290	B	834022
5291	B	835945
5292	B	834907
5293	B	836803
5294	B	835683
5295	B	837593
5296	B	836018
5297	B	837902
5298	B	836714
5299	B	838602
5300	B	837484
5301	B	839424
5302	B	838950
5303	B	840832

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SEQ ID	Or.	position
2114	F	454713
2115	F	452853
2116	F	455096
2117	F	453248
2118	F	455808
2119	F	453928
2120	F	457440
2121	F	455488
2122	F	458282
2123	F	456354
2124	F	459558
2125	F	457686
2126	F	460960
2127	F	459060
2128	F	461659
2129	F	459758
2130	F	462674
2131	F	460775
2132	F	463788
2133	F	461895
2134	F	464479
2135	F	462602
2136	F	465882
2137	F	463989
2138	F	467200
2139	F	465300
2140	F	468680
2141	F	466787
2142	F	469130
2143	F	467224
2144	F	469572
2145	F	467707
2146	F	470887
2147	F	468984

SEQ ID	Or.	position
3709	B	60363
3710	B	59406
3711	B	61301
3712	B	60450
3713	B	62316
3714	B	61722
3715	B	63603
3716	B	62585
3717	B	64473
3718	B	63362
3719	B	65285
3720	B	64203
3721	B	66103
3722	B	64850
3723	B	66749
3724	B	64899
3725	B	66776
3726	B	65164
3727	B	67067
3728	B	67514
3729	B	69390
3730	B	69097
3731	B	71033
3732	B	69470
3733	B	71354
3734	B	69961
3735	B	71898
3736	B	70707
3737	B	72579
3738	B	71249
3739	B	73134
3740	B	73458
3741	B	75376
3742	B	75121

SEQ ID	Or.	position
5304	B	839800
5305	B	841700
5306	B	840808
5307	B	842715
5308	B	841975
5309	B	843834
5310	B	842679
5311	B	844614
5312	B	843342
5313	B	845247
5314	B	843736
5315	B	845626
5316	B	846423
5317	B	848330
5318	B	844423
5319	B	846258
5320	B	848265
5321	B	850174
5322	B	850343
5323	B	852246
5324	B	851875
5325	B	853765
5326	B	853944
5327	B	855822
5328	B	855056
5329	B	856964
5330	B	855750
5331	B	857714
5332	B	856488
5333	B	858370
5334	B	857403
5335	B	859303
5336	B	859659
5337	B	861570

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SEQ ID	Or.	position
2148	F	471590
2149	F	469835
2150	F	473033
2151	F	471133
2152	F	473761
2153	F	471861
2154	F	474383
2155	F	472478
2156	F	475333
2157	F	473465
2158	F	476279
2159	F	474390
2160	F	478446
2161	F	476546
2162	F	478869
2163	F	476918
2164	F	479441
2165	F	477548
2166	F	479676
2167	F	477775
2168	F	481277
2169	F	479377
2170	F	481635
2171	F	479745
2172	F	483172
2173	F	481279
2174	F	484659
2175	F	482764
2176	F	485003
2177	F	483097
2178	F	487946
2179	F	486083
2180	F	487946
2181	F	486093

SEQ ID	Or.	position
3743	B	77020
3744	B	75741
3745	B	77608
3746	B	77447
3747	B	79300
3748	B	77535
3749	B	79430
3750	B	78333
3751	B	80243
3752	B	79300
3753	B	81197
3754	B	82201
3755	B	84100
3756	B	83493
3757	B	85405
3758	B	85075
3759	B	86973
3760	B	87141
3761	B	89086
3762	B	88903
3763	B	90810
3764	B	88038
3765	B	89946
3766	B	88981
3767	B	90884
3768	B	89485
3769	B	91385
3770	B	89975
3771	B	91855
3772	B	91680
3773	B	93567
3774	B	92008
3775	B	93902
3776	B	92633

SEQ ID	Or.	position
5338	B	860166
5339	B	862082
5340	B	860879
5341	B	862767
5342	B	861861
5343	B	863727
5344	B	862284
5345	B	864173
5346	B	863792
5347	B	865660
5348	B	864164
5349	B	866050
5350	B	864925
5351	B	866860
5352	B	866468
5353	B	868368
5354	B	866860
5355	B	868734
5356	B	867952
5357	B	869878
5358	B	869311
5359	B	871226
5360	B	869582
5361	B	871517
5362	B	871614
5363	B	873536
5364	B	872804
5365	B	874702
5366	B	873093
5367	B	874980
5368	B	874158
5369	B	876056
5370	B	874033
5371	B	875932

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SEQ ID	Or.	position
2182	F	489220
2183	F	487274
2184	F	490276
2185	F	488388
2186	F	492138
2187	F	490229
2188	F	492475
2189	F	490618
2190	F	493591
2191	F	491719
2192	F	494297
2193	F	492436
2194	F	494530
2195	F	492679
2196	F	494637
2197	F	492753
2198	F	495467
2199	F	493559
2200	F	496076
2201	F	494126
2202	F	497468
2203	F	495569
2204	F	498050
2205	F	496160
2206	F	498994
2207	F	497096
2208	F	500571
2209	F	498671
2210	F	501547
2211	F	499671
2212	F	502469
2213	F	500572
2214	F	503435
2215	F	501547

SEQ ID	Or.	position
3777	B	94569
3778	B	93390
3779	B	95288
3780	B	94354
3781	B	96254
3782	B	94897
3783	B	96772
3784	B	98519
3785	B	100439
3786	B	98962
3787	B	100853
3788	B	100451
3789	B	102387
3790	B	101639
3791	B	103473
3792	B	102457
3793	B	104357
3794	B	102745
3795	B	104666
3796	B	104544
3797	B	106464
3798	B	105338
3799	B	107237
3800	B	106127
3801	B	108014
3802	B	108693
3803	B	110587
3804	B	109189
3805	B	111079
3806	B	109684
3807	B	111580
3808	B	110587
3809	B	112486
3810	B	112740

SEQ ID	Or.	position
5372	B	874670
5373	B	876580
5374	B	875606
5375	B	877506
5376	B	876619
5377	B	878519
5378	B	878160
5379	B	880034
5380	B	878429
5381	B	880292
5382	B	879336
5383	B	881230
5384	B	879393
5385	B	881281
5386	B	880089
5387	B	881994
5388	B	881108
5389	B	883062
5390	B	882094
5391	B	884013
5392	B	883124
5393	B	885027
5394	B	884014
5395	B	885924
5396	B	884530
5397	B	886432
5398	B	885226
5399	B	887139
5400	B	889010
5401	B	890900
5402	B	890421
5403	B	892310
5404	B	891438
5405	B	893287

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SEQ ID	Or.	position
2216	F	505469
2217	F	503545
2218	F	506768
2219	F	504880
2220	F	507356
2221	F	505530
2222	F	508015
2223	F	506157
2224	F	508247
2225	F	506351
2226	F	509270
2227	F	507356
2228	F	510759
2229	F	508918
2230	F	511268
2231	F	509359
2232	F	512124
2233	F	510202
2234	F	512836
2235	F	510926
2236	F	514569
2237	F	512663
2238	F	514688
2239	F	512874
2240	F	515334
2241	F	513415
2242	F	515516
2243	F	513670
2244	F	516230
2245	F	514348
2246	F	517181
2247	F	515261
2248	F	517840
2249	F	515977

SEQ ID	Or.	position
3811	B	114673
3812	B	113684
3813	B	115653
3814	B	114216
3815	B	116158
3816	B	114836
3817	B	116732
3818	B	115473
3819	B	117380
3820	B	115898
3821	B	117797
3822	B	120031
3823	B	121926
3824	B	124231
3825	B	126158
3826	B	125215
3827	B	127115
3828	B	125352
3829	B	127271
3830	B	126492
3831	B	128390
3832	B	127150
3833	B	129050
3834	B	128010
3835	B	129905
3836	B	129947
3837	B	131873
3838	B	131255
3839	B	133205
3840	B	131873
3841	B	133749
3842	B	133381
3843	B	135305
3844	B	133804

SEQ ID	Or.	position
5406	B	891703
5407	B	893606
5408	B	893606
5409	B	895490
5410	B	894049
5411	B	896024
5412	B	894139
5413	B	896074
5414	B	894545
5415	B	896413
5416	B	894999
5417	B	896912
5418	B	896127
5419	B	898012
5420	B	897049
5421	B	898949
5422	B	901018
5423	B	902955
5424	B	902393
5425	B	904301
5426	B	904098
5427	B	906002
5428	B	903951
5429	B	905851
5430	B	905825
5431	B	907725
5432	B	906700
5433	B	908669
5434	B	907174
5435	B	909066
5436	B	907579
5437	B	909480
5438	B	908962
5439	B	910922

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SEQ ID	Or.	position
2250	F	518184
2251	F	516283
2252	F	518704
2253	F	516804
2254	F	519358
2255	F	517404
2256	F	520483
2257	F	518598
2258	F	521632
2259	F	519765
2260	F	521919
2261	F	520024
2262	F	523372
2263	F	521495
2264	F	524404
2265	F	522508
2266	F	525498
2267	F	523600
2268	F	525687
2269	F	523753
2270	F	526036
2271	F	524164
2272	F	526632
2273	F	524732
2274	F	528073
2275	F	526158
2276	F	528835
2277	F	526999
2278	F	529393
2279	F	527504
2280	F	530004
2281	F	528082
2282	F	530518
2283	F	528594

SEQ ID	Or.	position
3845	B	135704
3846	B	134219
3847	B	136133
3848	B	134729
3849	B	136633
3850	B	137694
3851	B	139583
3852	B	140496
3853	B	142396
3854	B	140953
3855	B	142856
3856	B	142031
3857	B	143950
3858	B	143520
3859	B	145425
3860	B	144066
3861	B	145967
3862	B	144629
3863	B	146519
3864	B	146547
3865	B	148446
3866	B	147304
3867	B	149227
3868	B	148296
3869	B	150255
3870	B	148769
3871	B	150670
3872	B	149320
3873	B	151168
3874	B	149532
3875	B	151470
3876	B	149934
3877	B	151845
3878	B	151168

SEQ ID	Or.	position
5440	B	909415
5441	B	911315
5442	B	909804
5443	B	911704
5444	B	910218
5445	B	912075
5446	B	910834
5447	B	912689
5448	B	911225
5449	B	913064
5450	B	912492
5451	B	914381
5452	B	912852
5453	B	914763
5454	B	913438
5455	B	915340
5456	B	913901
5457	B	915814
5458	B	914730
5459	B	916694
5460	B	915356
5461	B	917256
5462	B	915717
5463	B	917608
5464	B	916854
5465	B	918761
5466	B	916762
5467	B	918712
5468	B	917848
5469	B	919756
5470	B	918588
5471	B	920424
5472	B	918875
5473	B	920796

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SEQ ID	Or.	position
2284	F	532100
2285	F	530224
2286	F	533025
2287	F	531125
2288	F	533710
2289	F	531825
2290	F	534658
2291	F	532758
2292	F	535737
2293	F	533828
2294	F	539456
2295	F	537568
2296	F	540290
2297	F	538375
2298	F	540672
2299	F	538777
2300	F	541573
2301	F	539706
2302	F	542999
2303	F	541102
2304	F	543922
2305	F	542057
2306	F	544268
2307	F	542354
2308	F	544691
2309	F	542785
2310	F	546323
2311	F	544441
2312	F	546467
2313	F	544650
2314	F	547257
2315	F	545357
2316	F	547658
2317	F	545781

SEQ ID	Or.	position
3879	B	153047
3880	B	152275
3881	B	154165
3882	B	152887
3883	B	154804
3884	B	153600
3885	B	155482
3886	B	154217
3887	B	156157
3888	B	155523
3889	B	157396
3890	B	156823
3891	B	158731
3892	B	157745
3893	B	159645
3894	B	159207
3895	B	161084
3896	B	160216
3897	B	162127
3898	B	161451
3899	B	163350
3900	B	161818
3901	B	163726
3902	B	162601
3903	B	164501
3904	B	163282
3905	B	165205
3906	B	164171
3907	B	166082
3908	B	165812
3909	B	167672
3910	B	166939
3911	B	168861
3912	B	168421

SEQ ID	Or.	position
5474	B	919756
5475	B	921710
5476	B	920055
5477	B	921949
5478	B	920389
5479	B	922328
5480	B	921130
5481	B	922978
5482	B	921517
5483	B	923414
5484	B	921740
5485	B	923646
5486	B	921979
5487	B	923926
5488	B	922396
5489	B	924327
5490	B	922729
5491	B	924611
5492	B	923256
5493	B	925216
5494	B	923673
5495	B	925589
5496	B	924297
5497	B	926176
5498	B	924645
5499	B	926555
5500	B	925216
5501	B	927117
5502	B	925589
5503	B	927489
5504	B	926980
5505	B	928903
5506	B	927408
5507	B	929331

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SEQ ID	Or.	position
2318	F	548406
2319	F	546466
2320	F	549443
2321	F	547527
2322	F	550193
2323	F	548288
2324	F	551554
2325	F	549665
2326	F	552877
2327	F	550963
2328	F	554708
2329	F	552807
2330	F	556293
2331	F	554381
2332	F	557095
2333	F	555164
2334	F	557522
2335	F	555656
2336	F	558021
2337	F	556191
2338	F	558964
2339	F	557076
2340	F	560913
2341	F	559007
2342	F	562832
2343	F	561002
2344	F	563374
2345	F	561474
2346	F	565061
2347	F	563198
2348	F	566840
2349	F	564908
2350	F	567802
2351	F	565896

SEQ ID	Or.	position
3913	B	170322
3914	B	169503
3915	B	171369
3916	B	170715
3917	B	172587
3918	B	171554
3919	B	173512
3920	B	172596
3921	B	174496
3922	B	173021
3923	B	174847
3924	B	174716
3925	B	176619
3926	B	175205
3927	B	177143
3928	B	175943
3929	B	177830
3930	B	177244
3931	B	179180
3932	B	178337
3933	B	180239
3934	B	180274
3935	B	182181
3936	B	180972
3937	B	182864
3938	B	181659
3939	B	183572
3940	B	182864
3941	B	184750
3942	B	183876
3943	B	185778
3944	B	185007
3945	B	186910
3946	B	186246

SEQ ID	Or.	position
5508	B	927824
5509	B	929727
5510	B	928418
5511	B	930287
5512	B	928979
5513	B	930879
5514	B	930474
5515	B	932367
5516	B	930879
5517	B	932776
5518	B	931298
5519	B	933223
5520	B	931886
5521	B	933812
5522	B	932187
5523	B	934117
5524	B	932803
5525	B	934733
5526	B	933421
5527	B	935352
5528	B	933841
5529	B	935758
5530	B	934062
5531	B	935933
5532	B	934794
5533	B	936682
5534	B	936606
5535	B	938521
5536	B	938373
5537	B	940324
5538	B	939321
5539	B	941229
5540	B	941153
5541	B	943053

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SEQ ID	Or.	position
2352	F	571045
2353	F	569137
2354	F	572300
2355	F	570362
2356	F	572512
2357	F	570612
2358	F	572627
2359	F	570753
2360	F	573416
2361	F	571539
2362	F	573964
2363	F	572065
2364	F	574221
2365	F	572303
2366	F	574704
2367	F	572781
2368	F	574795
2369	F	572936
2370	F	575229
2371	F	573350
2372	F	576318
2373	F	574384
2374	F	577796
2375	F	575893
2376	F	578774
2377	F	576870
2378	F	581976
2379	F	580073
2380	F	582589
2381	F	580679
2382	F	582962
2383	F	581060
2384	F	583210
2385	F	581316

SEQ ID	Or.	position
3947	B	188160
3948	B	187080
3949	B	189016
3950	B	187490
3951	B	189421
3952	B	188044
3953	B	189929
3954	B	189711
3955	B	191656
3956	B	190594
3957	B	192533
3958	B	190731
3959	B	192679
3960	B	192027
3961	B	193906
3962	B	192684
3963	B	194643
3964	B	193419
3965	B	195348
3966	B	194878
3967	B	196750
3968	B	195270
3969	B	197166
3970	B	197255
3971	B	199165
3972	B	197859
3973	B	199756
3974	B	198443
3975	B	200328
3976	B	199202
3977	B	201084
3978	B	200198
3979	B	202084
3980	B	200547

SEQ ID	Or.	position
5542	B	942291
5543	B	944212
5544	B	944964
5545	B	946809
5546	B	945527
5547	B	947426
5548	B	946546
5549	B	948430
5550	B	946896
5551	B	948823
5552	B	948677
5553	B	950581
5554	B	949505
5555	B	951398
5556	B	949834
5557	B	951743
5558	B	950897
5559	B	952796
5560	B	951550
5561	B	953534
5562	B	951870
5563	B	953763
5564	B	953037
5565	B	954930
5566	B	954509
5567	B	956384
5568	B	955397
5569	B	957278
5570	B	958191
5571	B	960060
5572	B	959570
5573	B	961432
5574	B	961273
5575	B	963183

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SEQ ID	Or.	position
2386	F	583564
2387	F	581697
2388	F	584048
2389	F	582179
2390	F	584797
2391	F	582897
2392	F	584978
2393	F	583031
2394	F	586256
2395	F	584320
2396	F	587527
2397	F	585631
2398	F	588892
2399	F	587052
2400	F	589362
2401	F	587452
2402	F	590516
2403	F	588616
2404	F	592168
2405	F	590235
2406	F	592629
2407	F	590708
2408	F	592901
2409	F	590973
2410	F	593863
2411	F	591990
2412	F	595416
2413	F	593484
2414	F	595935
2415	F	593962
2416	F	597025
2417	F	595158
2418	F	598254
2419	F	596402

SEQ ID	Or.	position
3981	B	202447
3982	B	200934
3983	B	202806
3984	B	201224
3985	B	203115
3986	B	202606
3987	B	204583
3988	B	203735
3989	B	205603
3990	B	204218
3991	B	206147
3992	B	206686
3993	B	208569
3994	B	207672
3995	B	209558
3996	B	208799
3997	B	210648
3998	B	209701
3999	B	211599
4000	B	210500
4001	B	212364
4002	B	211064
4003	B	212957
4004	B	211557
4005	B	213453
4006	B	213248
4007	B	215101
4008	B	214372
4009	B	216286
4010	B	214931
4011	B	216887
4012	B	215375
4013	B	217268
4014	B	216928

SEQ ID	Or.	position
5576	B	961837
5577	B	963749
5578	B	962823
5579	B	964695
5580	B	962199
5581	B	964099
5582	B	965286
5583	B	967118
5584	B	965928
5585	B	967828
5586	B	967261
5587	B	969179
5588	B	968345
5589	B	970181
5590	B	969123
5591	B	971023
5592	B	970973
5593	B	972849
5594	B	972081
5595	B	973933
5596	B	973279
5597	B	975173
5598	B	974803
5599	B	976683
5600	B	975459
5601	B	977346
5602	B	976431
5603	B	978335
5604	B	976740
5605	B	978640
5606	B	977175
5607	B	979042
5608	B	977855
5609	B	979768

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SEQ ID	Or.	position
2420	F	600515
2421	F	598575
2422	F	601691
2423	F	599745
2424	F	603291
2425	F	601376
2426	F	603538
2427	F	601638
2428	F	604263
2429	F	602388
2430	F	605359
2431	F	603425
2432	F	606622
2433	F	604721
2434	F	607722
2435	F	605908
2436	F	609039
2437	F	607143
2438	F	609842
2439	F	607958
2440	F	611565
2441	F	609657
2442	F	612719
2443	F	610819
2444	F	613473
2445	F	611565
2446	F	614096
2447	F	612172
2448	F	615072
2449	F	613207
2450	F	615645
2451	F	613745
2452	F	617266
2453	F	615347

SEQ ID	Or.	position
4015	B	218828
4016	B	218137
4017	B	220037
4018	B	217661
4019	B	219561
4020	B	218937
4021	B	220822
4022	B	219229
4023	B	221130
4024	B	220005
4025	B	221868
4026	B	220654
4027	B	222560
4028	B	221294
4029	B	223195
4030	B	221762
4031	B	223673
4032	B	222338
4033	B	224212
4034	B	223510
4035	B	225417
4036	B	224094
4037	B	226033
4038	B	225417
4039	B	227291
4040	B	226033
4041	B	227907
4042	B	225811
4043	B	227671
4044	B	226947
4045	B	228871
4046	B	227523
4047	B	229432
4048	B	227907

SEQ ID	Or.	position
5610	B	978153
5611	B	980060
5612	B	978655
5613	B	980553
5614	B	979204
5615	B	981104
5616	B	979554
5617	B	981465
5618	B	981423
5619	B	983319
5620	B	980363
5621	B	982289
5622	B	982361
5623	B	984236
5624	B	983818
5625	B	985718
5626	B	984720
5627	B	986608
5628	B	985607
5629	B	987553
5630	B	986323
5631	B	988223
5632	B	986925
5633	B	988825
5634	B	987850
5635	B	989749
5636	B	988354
5637	B	990252
5638	B	988474
5639	B	990393
5640	B	989437
5641	B	991305
5642	B	993662
5643	B	995596

Substitution

SEQ ID	Or.	position
2454	F	618142
2455	F	616242
2456	F	619019
2457	F	617128
2458	F	619637
2459	F	617695
2460	F	620182
2461	F	618257
2462	F	620929
2463	F	619019
2464	F	621446
2465	F	619529
2466	F	622195
2467	F	620292
2468	F	623244
2469	F	621446
2470	F	623834
2471	F	621954
2472	F	625024
2473	F	623208
2474	F	626291
2475	F	624369
2476	F	626724
2477	F	624821
2478	F	627597
2479	F	625703
2480	F	627927
2481	F	626025
2482	F	628712
2483	F	626787
2484	F	629535
2485	F	627685
2486	F	630055
2487	F	628178

SEQ ID	Or.	position
4049	B	229784
4050	B	228692
4051	B	230578
4052	B	230253
4053	B	232157
4054	B	231299
4055	B	233194
4056	B	233226
4057	B	235130
4058	B	234073
4059	B	235950
4060	B	234510
4061	B	236399
4062	B	235094
4063	B	236993
4064	B	236552
4065	B	238440
4066	B	238440
4067	B	240381
4068	B	238989
4069	B	240917
4070	B	240294
4071	B	242181
4072	B	242260
4073	B	244157
4074	B	243066
4075	B	245029
4076	B	244703
4077	B	246603
4078	B	246151
4079	B	248017
4080	B	247104
4081	B	248997
4082	B	248001

SEQ ID	Or.	position
5644	B	994015
5645	B	995906
5646	B	994084
5647	B	995955
5648	B	994523
5649	B	996382
5650	B	995903
5651	B	997791
5652	B	996831
5653	B	998764
5654	B	998505
5655	B	1000417
5656	B	999445
5657	B	1001345
5658	B	1001253
5659	B	1003169
5660	B	1001751
5661	B	1003637
5662	B	1001954
5663	B	1003786
5664	B	1004003
5665	B	1005872
5666	B	1005114
5667	B	1006999
5668	B	1005620
5669	B	1007561
5670	B	1007761
5671	B	1009618
5672	B	1008052
5673	B	1009941
5674	B	1008954
5675	B	1010818
5676	B	1009679
5677	B	1011621

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SEQ ID	Or.	position
2488	F	630672
2489	F	628789
2490	F	637125
2491	F	635224
2492	F	637807
2493	F	635913
2494	F	639960
2495	F	638102
2496	F	639960
2497	F	638012
2498	F	643252
2499	F	641355
2500	F	644146
2501	F	642204
2502	F	645175
2503	F	643275
2504	F	645519
2505	F	643652
2506	F	646869
2507	F	644983
2508	F	649714
2509	F	647800
2510	F	650199
2511	F	648260
2512	F	651421
2513	F	649536
2514	F	652285
2515	F	650397
2516	F	652562
2517	F	650653
2518	F	659653
2519	F	657741
2520	F	661449
2521	F	659621

SEQ ID	Or.	position
4083	B	249872
4084	B	248835
4085	B	250713
4086	B	249697
4087	B	251574
4088	B	250643
4089	B	252560
4090	B	251439
4091	B	253306
4092	B	252401
4093	B	254231
4094	B	253312
4095	B	255224
4096	B	256969
4097	B	258840
4098	B	258065
4099	B	259964
4100	B	258945
4101	B	260826
4102	B	259428
4103	B	261313
4104	B	261845
4105	B	263746
4106	B	264350
4107	B	266263
4108	B	264963
4109	B	266887
4110	B	265848
4111	B	267749
4112	B	266644
4113	B	268546
4114	B	268188
4115	B	270091
4116	B	268188

SEQ ID	Or.	position
5678	B	1012274
5679	B	1014193
5680	B	1012682
5681	B	1014550
5682	B	1012855
5683	B	1014755
5684	B	1013104
5685	B	1014996
5686	B	1013698
5687	B	1015571
5688	B	1014289
5689	B	1016181
5690	B	1014730
5691	B	1016653
5692	B	1015459
5693	B	1017377
5694	B	1016272
5695	B	1018122
5696	B	1017377
5697	B	1019285
5698	B	1018043
5699	B	1019888
5700	B	1019146
5701	B	1021064
5702	B	1019421
5703	B	1021323
5704	B	1020440
5705	B	1022319
5706	B	1021269
5707	B	1023161
5708	B	1021789
5709	B	1023722
5710	B	1022638
5711	B	1024535

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SEQ ID	Or.	position
2522	F	662058
2523	F	660167
2524	F	662726
2525	F	660831
2526	F	663526
2527	F	661591
2528	F	664035
2529	F	662134
2530	F	665504
2531	F	663591
2532	F	665530
2533	F	663663
2534	F	666606
2535	F	664705
2536	F	667901
2537	F	665987
2538	F	667953
2539	F	666037
2540	F	668397
2541	F	666496
2542	F	669235
2543	F	667366
2544	F	669763
2545	F	667879
2546	F	670513
2547	F	668612
2548	F	670963
2549	F	669058
2550	F	672473
2551	F	670573
2552	F	672985
2553	F	671072
2554	F	674381
2555	F	672493

SEQ ID	Or.	position
4117	B	270091
4118	B	268546
4119	B	270440
4120	B	268785
4121	B	270697
4122	B	270439
4123	B	272288
4124	B	271181
4125	B	273043
4126	B	271833
4127	B	273738
4128	B	273188
4129	B	275062
4130	B	273817
4131	B	275718
4132	B	275062
4133	B	277005
4134	B	275886
4135	B	277857
4136	B	277923
4137	B	279868
4138	B	279043
4139	B	281004
4140	B	280126
4141	B	282004
4142	B	281004
4143	B	282911
4144	B	281825
4145	B	283746
4146	B	282335
4147	B	284236
4148	B	284583
4149	B	286455
4150	B	285055

SEQ ID	Or.	position
5712	B	1023900
5713	B	1025787
5714	B	1024169
5715	B	1026083
5716	B	1024996
5717	B	1026938
5718	B	1025295
5719	B	1027165
5720	B	1026136
5721	B	1028031
5722	B	1026823
5723	B	1028699
5724	B	1027642
5725	B	1029524
5726	B	1030824
5727	B	1032737
5728	B	1033510
5729	B	1035372
5730	B	1032306
5731	B	1034209
5732	B	1037275
5733	B	1162
5734	B	1036130
5735	B	1038037
5736	B	1036727
5737	B	149
5738	B	225
5739	B	2104
5740	B	17209
5741	B	19109
5742	B	32032
5743	B	33899
5744	B	57057
5745	B	58954

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SEQ ID	Or.	position
2556	F	675029
2557	F	673135
2558	F	676254
2559	F	674357
2560	F	677481
2561	F	675559
2562	F	678423
2563	F	676580
2564	F	679049
2565	F	677156
2566	F	680360
2567	F	678423
2568	F	681257
2569	F	679420
2570	F	682281
2571	F	680435
2572	F	682870
2573	F	681012
2574	F	684147
2575	F	682281
2576	F	684582
2577	F	682664
2578	F	685978
2579	F	684033
2580	F	687121
2581	F	685186
2582	F	687974
2583	F	686044
2584	F	688169
2585	F	686313
2586	F	689393
2587	F	687511
2588	F	689580
2589	F	687727

SEQ ID	Or.	position
4151	B	286921
4152	B	285894
4153	B	287794
4154	B	286441
4155	B	288315
4156	B	286921
4157	B	288811
4158	B	288145
4159	B	290018
4160	B	289448
4161	B	291407
4162	B	290899
4163	B	292805
4164	B	291814
4165	B	293655
4166	B	292489
4167	B	294373
4168	B	293317
4169	B	295183
4170	B	295073
4171	B	297037
4172	B	295932
4173	B	297846
4174	B	296556
4175	B	298475
4176	B	297474
4177	B	299413
4178	B	298970
4179	B	300855
4180	B	300679
4181	B	302595
4182	B	302372
4183	B	304272
4184	B	305137

SEQ ID	Or.	position
5746	B	57141
5747	B	59033
5748	B	65406
5749	B	67210
5750	B	73871
5751	B	75741
5752	B	78956
5753	B	80903
5754	B	80042
5755	B	81944
5756	B	82642
5757	B	84491
5758	B	87820
5759	B	89658
5760	B	110184
5761	B	112086
5762	B	111873
5763	B	113837
5764	B	112302
5765	B	114206
5766	B	113165
5767	B	115093
5768	B	114270
5769	B	116158
5770	B	121039
5771	B	122904
5772	B	125742
5773	B	127643
5774	B	132170
5775	B	134028
5776	B	144647
5777	B	146547
5778	B	150960
5779	B	152837

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SEQ ID	Or.	position
2590	F	690204
2591	F	688342
2592	F	690431
2593	F	688497
2594	F	691790
2595	F	689919
2596	F	693614
2597	F	691704
2598	F	694723
2599	F	692821
2600	F	696922
2601	F	695033
2602	F	697714
2603	F	695816
2604	F	698510
2605	F	696612
2606	F	700037
2607	F	698119
2608	F	700691
2609	F	698783
2610	F	701885
2611	F	699984
2612	F	703303
2613	F	701403
2614	F	704791
2615	F	702877
2616	F	705452
2617	F	703584
2618	F	705918
2619	F	704019
2620	F	706241
2621	F	704322
2622	F	707833
2623	F	705939

SEQ ID	Or.	position
4185	B	307039
4186	B	306377
4187	B	308287
4188	B	306730
4189	B	308614
4190	B	307199
4191	B	309120
4192	B	309018
4193	B	310903
4194	B	310128
4195	B	312001
4196	B	310966
4197	B	312899
4198	B	311790
4199	B	313705
4200	B	312671
4201	B	314590
4202	B	314590
4203	B	316484
4204	B	314977
4205	B	316880
4206	B	315775
4207	B	317646
4208	B	316760
4209	B	318627
4210	B	317541
4211	B	319422
4212	B	317829
4213	B	319763
4214	B	318703
4215	B	320628
4216	B	318094
4217	B	320048
4218	B	319182

SEQ ID	Or.	position
5780	B	164761
5781	B	166686
5782	B	166362
5783	B	168305
5784	B	168970
5785	B	170889
5786	B	171056
5787	B	173021
5788	B	177747
5789	B	179629
5790	B	188605
5791	B	190552
5792	B	189016
5793	B	190924
5794	B	190871
5795	B	192749
5796	B	197533
5797	B	199449
5798	B	211604
5799	B	213554
5800	B	235455
5801	B	237385
5802	B	237448
5803	B	239387
5804	B	250266
5805	B	252155
5806	B	253731
5807	B	255663
5808	B	255115
5809	B	256969
5810	B	272158
5811	B	274093
5812	B	276317
5813	B	278190

Sequence Search

SEQ ID	Or.	position
2624	F	708029
2625	F	706086
2626	F	708653
2627	F	706753
2628	F	710042
2629	F	708142
2630	F	711185
2631	F	709291
2632	F	712521
2633	F	710641
2634	F	713432
2635	F	711506
2636	F	713901
2637	F	711987
2638	F	714557
2639	F	712708
2640	F	715339
2641	F	713437
2642	F	715702
2643	F	713761
2644	F	716892
2645	F	714970
2646	F	718240
2647	F	716381
2648	F	718240
2649	F	716380
2650	F	719563
2651	F	717658
2652	F	719916
2653	F	718025
2654	F	720346
2655	F	718429
2656	F	721306
2657	F	719440

SEQ ID	Or.	position
4219	B	321067
4220	B	320404
4221	B	322278
4222	B	321720
4223	B	323625
4224	B	322158
4225	B	324071
4226	B	322582
4227	B	324500
4228	B	323371
4229	B	325260
4230	B	325173
4231	B	327057
4232	B	325882
4233	B	327770
4234	B	326509
4235	B	328388
4236	B	327463
4237	B	329330
4238	B	328374
4239	B	330270
4240	B	328850
4241	B	330751
4242	B	329330
4243	B	331210
4244	B	329883
4245	B	331822
4246	B	330886
4247	B	332797
4248	B	331395
4249	B	333375
4250	B	331990
4251	B	333884
4252	B	332669

SEQ ID	Or.	position
5814	B	278470
5815	B	280366
5816	B	283005
5817	B	284873
5818	B	293718
5819	B	295643
5820	B	303690
5821	B	305624
5822	B	309538
5823	B	311476
5824	B	312791
5825	B	314685
5826	B	313073
5827	B	314977
5828	B	313506
5829	B	315343
5830	B	320823
5831	B	322730
5832	B	340723
5833	B	342638
5834	B	353562
5835	B	355444
5836	B	373944
5837	B	375838
5838	B	377997
5839	B	379877
5840	B	379877
5841	B	381778
5842	B	395318
5843	B	397228
5844	B	401846
5845	B	403782
5846	B	410759
5847	B	412677

Substituted

SEQ ID	Or.	position
2658	F	722178
2659	F	720271
2660	F	723159
2661	F	721259
2662	F	724357
2663	F	722451
2664	F	725491
2665	F	723647
2666	F	726312
2667	F	724417
2668	F	726526
2669	F	724590
2670	F	727245
2671	F	725325
2672	F	728081
2673	F	726209
2674	F	728510
2675	F	726618
2676	F	729214
2677	F	727319
2678	F	733006
2679	F	731064
2680	F	734566
2681	F	732618
2682	F	735410
2683	F	733522
2684	F	736226
2685	F	734388
2686	F	736969
2687	F	735092
2688	F	737678
2689	F	735820
2690	F	738618
2691	F	736719

SEQ ID	Or.	position
4253	B	334575
4254	B	333375
4255	B	335166
4256	B	333811
4257	B	335709
4258	B	334579
4259	B	336497
4260	B	334590
4261	B	336497
4262	B	335362
4263	B	337262
4264	B	335863
4265	B	337723
4266	B	335939
4267	B	337848
4268	B	336558
4269	B	338461
4270	B	337647
4271	B	339503
4272	B	340181
4273	B	342110
4274	B	342069
4275	B	343977
4276	B	342269
4277	B	344168
4278	B	342694
4279	B	344593
4280	B	343594
4281	B	345503
4282	B	344269
4283	B	346199
4284	B	344452
4285	B	346382
4286	B	345362

SEQ ID	Or.	position
5848	B	411878
5849	B	413779
5850	B	415199
5851	B	417099
5852	B	423479
5853	B	425332
5854	B	428421
5855	B	430332
5856	B	429678
5857	B	431571
5858	B	443036
5859	B	444947
5860	B	444280
5861	B	446161
5862	B	443964
5863	B	445811
5864	B	446392
5865	B	448276
5866	B	468498
5867	B	470382
5868	B	472328
5869	B	474285
5870	B	488594
5871	B	490459
5872	B	497914
5873	B	499837
5874	B	500718
5875	B	502596
5876	B	509811
5877	B	511702
5878	B	511485
5879	B	513385
5880	B	527090
5881	B	529014

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SEQ ID	Or.	position
2692	F	739841
2693	F	737941
2694	F	741797
2695	F	739895
2696	F	742583
2697	F	740705
2698	F	743087
2699	F	741169
2700	F	744211
2701	F	742277
2702	F	744391
2703	F	742492
2704	F	744739
2705	F	742813
2706	F	745342
2707	F	743438
2708	F	746197
2709	F	744273
2710	F	746725
2711	F	744784
2712	F	748041
2713	F	746142
2714	F	748723
2715	F	746795
2716	F	749171
2717	F	747310
2718	F	749475
2719	F	747568
2720	F	749761
2721	F	747855
2722	F	752284
2723	F	750384
2724	F	753397
2725	F	751497

SEQ ID	Or.	position
4287	B	347262
4288	B	346199
4289	B	348069
4290	B	347326
4291	B	349228
4292	B	348165
4293	B	350060
4294	B	350399
4295	B	352288
4296	B	351503
4297	B	353403
4298	B	352460
4299	B	354356
4300	B	352948
4301	B	354901
4302	B	353959
4303	B	355890
4304	B	354438
4305	B	356378
4306	B	354997
4307	B	356866
4308	B	356897
4309	B	358793
4310	B	357643
4311	B	359499
4312	B	358323
4313	B	360222
4314	B	360972
4315	B	362863
4316	B	361348
4317	B	363263
4318	B	362109
4319	B	364008
4320	B	362983

SEQ ID	Or.	position
5882	B	532083
5883	B	533999
5884	B	557487
5885	B	559357
5886	B	565191
5887	B	567099
5888	B	567452
5889	B	569355
5890	B	571110
5891	B	573047
5892	B	571557
5893	B	573461
5894	B	576288
5895	B	578181
5896	B	590890
5897	B	592770
5898	B	598813
5899	B	600714
5900	B	607146
5901	B	609012
5902	B	608260
5903	B	610162
5904	B	610621
5905	B	612514
5906	B	633573
5907	B	635473
5908	B	637702
5909	B	639603
5910	B	650757
5911	B	652667
5912	B	652808
5913	B	654682
5914	B	655545
5915	B	657446

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SEQ ID	Or.	position
2726	F	754693
2727	F	752818
2728	F	756537
2729	F	754648
2730	F	758227
2731	F	756276
2732	F	759119
2733	F	757196
2734	F	759639
2735	F	757745
2736	F	759957
2737	F	758069
2738	F	760675
2739	F	758798
2740	F	761489
2741	F	759589
2742	F	762033
2743	F	760133
2744	F	763116
2745	F	761215
2746	F	764209
2747	F	762315
2748	F	764602
2749	F	762702
2750	F	765834
2751	F	763904
2752	F	766671
2753	F	764806
2754	F	768033
2755	F	766063
2756	F	768572
2757	F	766671
2758	F	769873
2759	F	768006

SEQ ID	Or.	position
4321	B	364867
4322	B	364110
4323	B	366002
4324	B	365415
4325	B	367338
4326	B	365807
4327	B	367733
4328	B	367607
4329	B	369440
4330	B	368881
4331	B	370788
4332	B	369317
4333	B	371209
4334	B	370522
4335	B	372440
4336	B	371311
4337	B	373206
4338	B	373097
4339	B	374941
4340	B	373753
4341	B	375649
4342	B	374424
4343	B	376324
4344	B	374956
4345	B	376888
4346	B	376611
4347	B	378511
4348	B	377297
4349	B	379209
4350	B	378960
4351	B	380880
4352	B	379309
4353	B	381180
4354	B	379667

SEQ ID	Or.	position
5916	B	661392
5917	B	663292
5918	B	677837
5919	B	679716
5920	B	679748
5921	B	681674
5922	B	732909
5923	B	734756
5924	B	742639
5925	B	744503
5926	B	759613
5927	B	761510
5928	B	760782
5929	B	762671
5930	B	771617
5931	B	773519
5932	B	772628
5933	B	774528
5934	B	788703
5935	B	790577
5936	B	816591
5937	B	818443
5938	B	847145
5939	B	849042
5940	B	868276
5941	B	870177
5942	B	875887
5943	B	877779
5944	B	877137
5945	B	879035
5946	B	884780
5947	B	886680
5948	B	892172
5949	B	894073

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SEQ ID	Or.	position
2760	F	769966
2761	F	768060
2762	F	770411
2763	F	768455
2764	F	771103
2765	F	769211
2766	F	771980
2767	F	770116
2768	F	773176
2769	F	771305
2770	F	773937
2771	F	771980
2772	F	776399
2773	F	774514
2774	F	776672
2775	F	774773
2776	F	777446
2777	F	775596
2778	F	779102
2779	F	777192
2780	F	781078
2781	F	779148
2782	F	782192
2783	F	780236
2784	F	785250
2785	F	783413
2786	F	785324
2787	F	783427
2788	F	786392
2789	F	784488
2790	F	787401
2791	F	785488
2792	F	787693

SEQ ID	Or.	position
4355	B	381553
4356	B	380238
4357	B	382152
4358	B	381699
4359	B	383615
4360	B	382790
4361	B	384687
4362	B	383935
4363	B	385837
4364	B	384167
4365	B	386065
4366	B	385479
4367	B	387365
4368	B	385730
4369	B	387635
4370	B	387115
4371	B	389019
4372	B	386903
4373	B	388753
4374	B	387595
4375	B	389504
4376	B	388133
4377	B	390055
4378	B	388524
4379	B	390455
4380	B	389428
4381	B	391321
4382	B	390313
4383	B	392241
4384	B	391321
4385	B	393147
4386	B	392032
4387	B	393943

SEQ ID	Or.	position
5950	B	900990
5951	B	902955
5952	B	902780
5953	B	904687
5954	B	908266
5955	B	910218
5956	B	912811
5957	B	914730
5958	B	935988
5959	B	937863
5960	B	947227
5961	B	949089
5962	B	953426
5963	B	955397
5964	B	966421
5965	B	968345
5966	B	969548
5967	B	971477
5968	B	971390
5969	B	973279
5970	B	972661
5971	B	974581
5972	B	973730
5973	B	975665
5974	B	998885
5975	B	1000774
5976	B	1004572
5977	B	1006449
5978	B	1010507
5979	B	1012353
5980	B	1029707
5981	B	1031628

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SUBSTITUTE SHEET (RULE 26)

WHAT IS CLAIMED IS:

1. An isolated polynucleotide having a nucleotide sequence of a *Chlamydia trachomatis* genome, comprising

(a) the nucleotide sequence of SEQ ID No. 1;

(b) the nucleotide sequence contained within the *Chlamydia trachomatis* genomic DNA in ECACC Deposit No. 98112618;

(c) the nucleotide sequence contained in a clone insert in ECACC Deposit No. 98112617;

(d) a nucleotide sequence exhibiting at least 99.9% identity with the sequence of SEQ ID No. 1; or

(e) a nucleotide sequence exhibiting at least 80% homology to SEQ ID No. 1.

2. An isolated polynucleotide which hybridizes to SEQ ID No. 1 or to the *Chlamydia trachomatis* genomic DNA contained in ECACC Deposit No. 98112618 or to a clone insert in ECACC Deposit No. 98112617 under conditions of high stringency .

3. An isolated polynucleotide which hybridizes to SEQ ID No. 1 or to the *Chlamydia trachomatis* genomic DNA contained in ECACC Deposit No. 98112618 under conditions of intermediate stringency.

4. An isolated polynucleotide having a nucleotide sequence of an open reading frame (ORF) of a *Chlamydia trachomatis* genome, comprising:

(a) a nucleotide sequence chosen from one of ORF2 to ORF 1197;

(b) a nucleotide sequence exhibiting at least 99.9% identity with one of ORF2 to ORF 1197; or

(c) a nucleotide sequence exhibiting at least 80% homology to one of ORF2 to ORF 1197.

5. An isolated polynucleotide which hybridizes to one of ORF2 to ORF 1197 under conditions of high stringency.

6. An isolated polynucleotide which hybridizes to one of ORF2 to ORF 1197 under conditions of intermediate stringency.

7. The polynucleotide of Claim 2, 3, 4, 5, or 6 which encodes the following polypeptides or fragments thereof:

(a) a *Chlamydia trachomatis* transmembrane polypeptide having between 1 and 3 transmembrane domains;

(b) a *Chlamydia trachomatis* transmembrane polypeptide having between 4 and 6 transmembrane domains;

(c) a *Chlamydia trachomatis* transmembrane polypeptide having at least 7 transmembrane domains;

(d) a *Chlamydia trachomatis* polypeptide involved in intermediate metabolism of sugars and/or cofactors;

(e) a *Chlamydia trachomatis* polypeptide involved in intermediate metabolism of nucleotides or nucleic acids;

(f) a *Chlamydia trachomatis* polypeptide involved in metabolism of amino acids or polypeptides;

(g) a *Chlamydia trachomatis* polypeptide having involved in metabolism of fatty acids;

(h) a *Chlamydia trachomatis* polypeptide involved in the synthesis of the cell wall;

(i) a *Chlamydia trachomatis* polypeptide involved in transcription, translation, and/or maturation process;

(j) a *Chlamydia trachomatis* transport polypeptide;

(k) a *Chlamydia trachomatis* polypeptide involved in the virulence process;

(l) a *Chlamydia trachomatis* polypeptide involved in the secretory system and/or which is secreted;

(m) a *Chlamydia trachomatis* polypeptide of the cellular envelope or outer cellular envelope of *Chlamydia trachomatis*.

(n) a *Chlamydia trachomatis* surface exposed polypeptide;

(o) a *Chlamydia trachomatis* lipoprotein;

(p) a *Chlamydia trachomatis* polypeptide involved in lipopolysaccharide biosynthesis;

(q) a *Chlamydia trachomatis* KDO-related polypeptide;

(r) a *Chlamydia trachomatis* phosphomannomutase-related polypeptide;

(s) a *Chlamydia trachomatis* phosphoglucomutase-related polypeptide;

(t) a *Chlamydia trachomatis* lipid A component-related polypeptide;

(u) a *Chlamydia trachomatis* polypeptide that contains an RGD sequence;

(v) a *Chlamydia trachomatis* Type III secreted polypeptide;

(w) a *Chlamydia trachomatis* cell wall anchored surface polypeptide; or

(x) a *Chlamydia trachomatis* polypeptide that is not found in *Chlamydia trachomatis*.

8. A polynucleotide encoding a fusion protein, comprising one of ORF2 to ORF 1197 of Claim 4, 5, or 6 ligated in frame to a polynucleotide encoding a heterologous polypeptide.

9. A recombinant vector that contains the polynucleotide of Claim 1, 2, 3, 4, 5 or 6.

10. A recombinant vector that contains the polynucleotide of Claim 8.

11. A recombinant vector that contains the polynucleotide of Claim 4, 5 or 6, operatively associated with a regulatory sequence that controls gene expression.

12. A recombinant vector that contains the polynucleotide of Claim 8 operatively associated with a regulatory sequence that controls gene expression.

13. A genetically engineered host cell that contains the polynucleotide of Claim 1, 2, 3, 4, 5 or 6.

14. A genetically engineered host cell that contains the polynucleotide of Claim 8.

15. A genetically engineered host cell that contains the polynucleotide of Claim 4, 5 or 6 operatively associated with a regulatory sequence that controls gene expression in the host cell.

16. A genetically engineered host cell that contains the polynucleotide of Claim 8 operatively associated with a regulatory sequence that controls gene expression in the host cell.

17. A method for producing a polypeptide, comprising:

(a) culturing the genetically engineered host cell of Claim 15 under conditions suitable to produce the polypeptide encoded by the polynucleotide; and

(b) recovering the polypeptide from the culture.

18. A method for producing a fusion protein, comprising:

(a) culturing the genetically engineered host cell of Claim 16 under conditions suitable to produce the fusion protein encoded by the polynucleotide; and

(b) recovering the fusion protein from the culture.

19. A polypeptide encoded by the polynucleotide of Claim 4, 5 or 6.

20. The polypeptide of Claim 19 which immunoreacts with seropositive serum of an individual infected with *Chlamydia trachomatis*.

21. The polypeptide of Claim 19 which comprises the following polypeptides or fragments thereof:

(a) a *Chlamydia trachomatis* transmembrane polypeptide having between 1 and 3 transmembrane domains;

(b) a *Chlamydia trachomatis* transmembrane polypeptide having between 4 and 6 transmembrane domains;

(c) a *Chlamydia trachomatis* transmembrane polypeptide having at least 7 transmembrane domains;

(d) a *Chlamydia trachomatis* polypeptide involved in intermediate metabolism of sugars and/or cofactors;

(e) a *Chlamydia trachomatis* polypeptide involved in intermediate metabolism of nucleotides or nucleic acids;

(f) a *Chlamydia trachomatis* polypeptide involved in metabolism of amino acids or polypeptides;

(g) a *Chlamydia trachomatis* polypeptide involved in metabolism of fatty acids;

(h) a *Chlamydia trachomatis* polypeptide involved in the synthesis of the cell wall;

(i) a *Chlamydia trachomatis* polypeptide involved in transcription, translation, and/or maturation process;

(j) a *Chlamydia trachomatis* transport polypeptide;

(k) a *Chlamydia trachomatis* polypeptide involved in the virulence process;

(l) a *Chlamydia trachomatis* polypeptide involved in the secretory system and/or which is secreted;

(m) a *Chlamydia trachomatis* polypeptide of the cellular envelope or outer cellular envelope of *Chlamydia trachomatis*.

(n) a *Chlamydia trachomatis* surface exposed polypeptide;

(o) a *Chlamydia trachomatis* lipoprotein;

(p) a *Chlamydia trachomatis* polypeptide involved in lipopolysaccharide biosynthesis;

(q) a *Chlamydia trachomatis* KDO-related polypeptide;

(r) a *Chlamydia trachomatis* phosphomannomutase-related polypeptide;

(s) a *Chlamydia trachomatis* phosphoglucomutase-related polypeptide;

(t) a *Chlamydia trachomatis* lipid A component-related polypeptide;

(u) a *Chlamydia trachomatis* polypeptide that contains an RGD sequence;

(v) a *Chlamydia trachomatis* Type III secreted polypeptide;

(w) a *Chlamydia trachomatis* cell wall anchored surface polypeptide; or

(x) a *Chlamydia trachomatis* polypeptide that is not found in *Chlamydia trachomatis*.

22. A fusion protein encoded by the polynucleotide of Claim 8.

23. The fusion protein of Claim 22 which immunoreacts with seropositive serum of an individual infected with *Chlamydia trachomatis*.

24. An antibody that immunospecifically binds to the polypeptide of Claim 19.

25. An antibody that immunospecifically binds to the fusion protein of Claim 22.

26. A method for the detection and/or identification of *Chlamydia trachomatis* in a biological sample, comprising:

(a) contacting the sample with a polynucleotide primer of Claim 1, 2, 3, 4, 5, or 6 in the presence of a polymerase enzyme and nucleotides under conditions which permit primer extension; and

(b) detecting the presence of primer extension products in the sample in which the detection of primer extension products indicates the presence of *Chlamydia trachomatis* in the sample.

27. A method for the detection and/or identification of *Chlamydia trachomatis* in a biological sample, comprising:

(a) contacting the sample with a polynucleotide probe of Claim 1, 2, 3, 4, 5, or 6 under conditions which permit hybridization of complementary base pairs; and

(b) detecting the presence of hybridization complexes in the sample in which the detection of hybridization complexes indicates the presence of *Chlamydia trachomatis* in the sample.

28. A method for the detection and/or identification of *Chlamydia trachomatis* in a biological sample, comprising:

(a) contacting the sample with the antibody of Claim 24 under conditions suitable for the formation of immune complexes; and

(b) detecting the presence of immune complexes in the sample, in which the detection of immune complexes indicates the presence of *Chlamydia trachomatis* in the sample.

29. A method for the detection and/or identification of antibodies to *Chlamydia trachomatis* in a biological sample, comprising:

(a) contacting the sample with a polypeptide of Claim 19 under conditions suitable for the formation of immune complexes; and

(b) detecting the presence of immune complexes in the sample, in which the detection of immune complexes indicates the presence of *Chlamydia trachomatis* in the sample.

30. A DNA chip containing an array of polynucleotides comprising at least one of the polynucleotides of Claim 1, 2, 3, 4, 5, or 6.

31. A protein chip containing an array of polypeptides comprising at least one of the polypeptides of Claim 19.

32. An immunogenic composition comprising the polypeptide of Claim 19 and a pharmaceutically acceptable carrier.

33. An immunogeneic composition comprising the polypeptide of Claim 20 and a pharmaceutically acceptable carrier.

34. An immunogenic composition comprising the fusion protein of Claim 22 and a pharmaceutically acceptable carrier.

35. An immunogenic composition comprising the fusion protein of Claim 23 and a pharmaceutically acceptable carrier.

36. A pharmaceutical composition comprising the polypeptide of Claim 19 and a pharmaceutically acceptable carrier.

37. A pharmaceutical composition comprising the polypeptide of Claim 20 and a pharmaceutically acceptable carrier.

38. A pharmaceutical composition comprising the polypeptide of Claim 22 and a pharmaceutically acceptable carrier.

39. A pharmaceutical composition comprising the polypeptide of Claim 23 and a pharmaceutically acceptable carrier.

40. A method of immunizing against *Chlamydia trachomatis*, comprising: administering to a host an immunizing amount of the immunogenic composition of Claim 32.

41. A method of immunizing against *Chlamydia trachomatis*, comprising: administering to a host an immunizing amount of the immunogenic composition of Claim 33.

42. A method of immunizing against *Chlamydia trachomatis*, comprising administering to a host an immunizing amount of the immunogenic composition of Claim 34.

43. A method of immunizing against *Chlamydia trachomatis*, comprising: administering to a host an immunizing amount of the immunogenic composition of Claim 35.

44. A DNA immunogenic composition comprising the expression vector of Claim 11.

45. The DNA composition of Claim 44, wherein the DNA composition directs the expression of a neutralizing epitope of *Chlamydia trachomatis.*

46. A DNA immunogenic composition comprising the expression vector of Claim 12.

47. The DNA composition of Claim 46, wherein the DNA composition directs the expression of a neutralizing epitope of *Chlamydia trachomatis.*

48. A screening assay, comprising:

(a) contacting a test compound with an isolated polynucleotide of Claim 1, 2, 3, 4, 5 or 6; and

(b) detecting whether binding occurs.

49. A screening assay, comprising:

(a) contacting a test compound with the polypeptide of Claim 19; and

(b) detecting whether binding occurs.

50. A screening assay, comprising:

(a) contacting a test compound with the polypeptide of Claim 22; and

(b) detecting whether binding occurs.

51. A kit comprising a container containing an isolated polynucleotide of Claim 1, 2, 3, 4, 5 or 6.

52. The kit of Claim 51 wherein the polynucleotide is a primer or a probe.

53. The kit of Claim 51 wherein the polynucleotide is a primer and the kit further comprises a container containing a polymerase.

54. The kit of Claim 51 which further comprises a container containing deoxynucleotide triphosphates.

55. A kit comprising a container containing an antibody that immunospecifically binds to the polypeptide of Claim 19.

56. A kit comprising a container containing an antibody that immunospecifically binds to the fusion protein of Claim 22.

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ABSTRACT OF THE INVENTION

The subject of the invention is the genomic sequence and the nucleotide sequences encoding polypeptides of *Chlamydia trachomatis*, such as cellular envelope polypeptides, which are secreted or specific, or which are involved in metabolism, in the replication process or in virulence, polypeptides encoded by such sequences, as well as vectors including the said sequences and cells or animals transformed with these vectors. The invention also relates to transcriptional gene products of the *Chlamydia trachomatis* genome, such as, for example, antisense and ribozyme molecules, which can be used to control growth of the microorganism. The invention also relates to methods of detecting these nucleic acids or polypeptides and kits for diagnosing *Chlamydia trachomatis* infection. The invention also relates to a method of selecting compounds capable of modulating bacterial infection and a method for the biosynthesis or biodegradation of molecules of interest using the said nucleotide sequences or the said polypeptides. The invention finally comprises, pharmaceutical, in particular vaccine, compositions for the prevention and/or treatment of bacterial, in particular *Chlamydia trachomatis*, infections.

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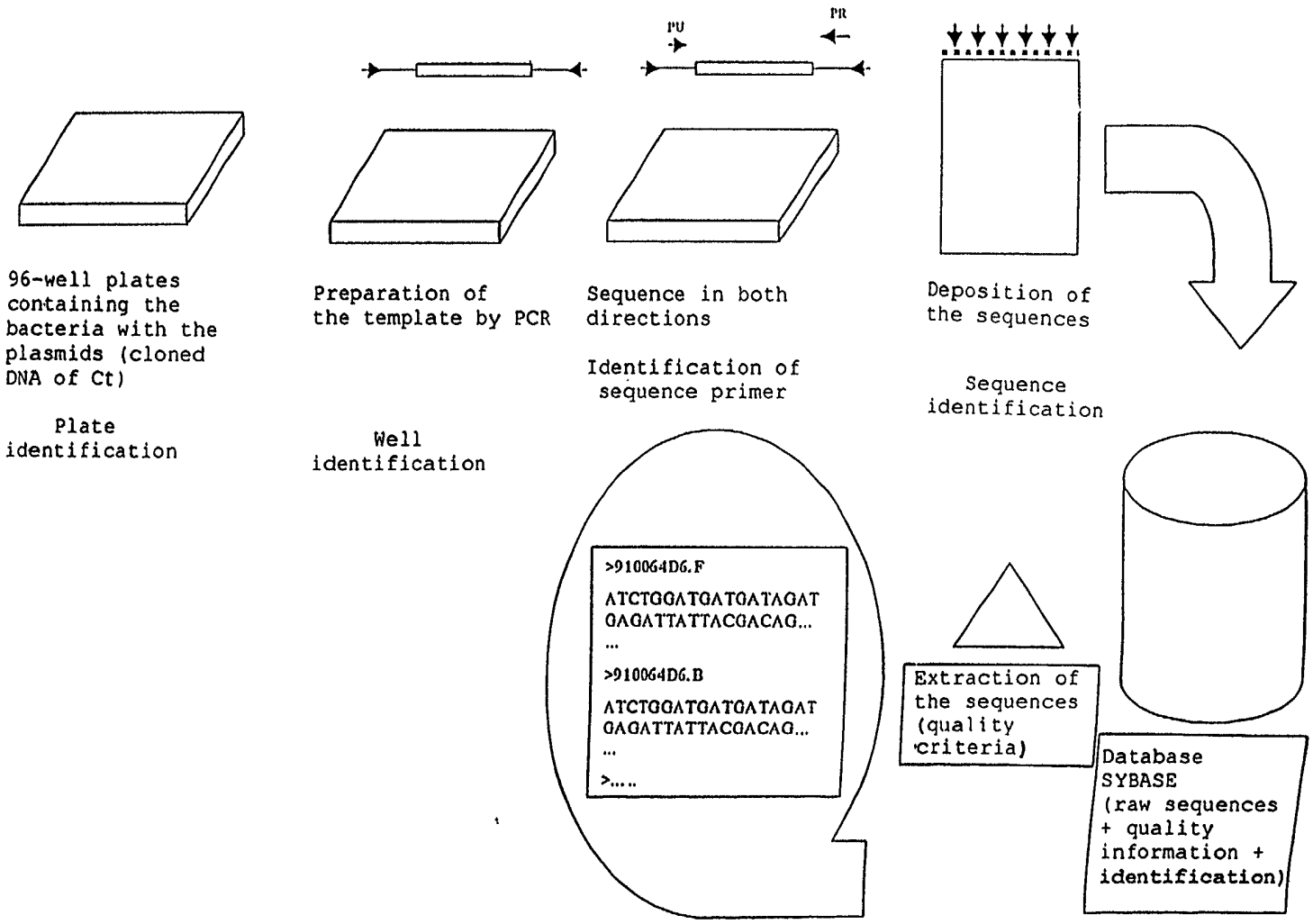

PU
PR
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Preparation of the template by PCR
Well identification
Sequence in both directions
Identification of sequence primer
Deposition of the sequences
Sequence identification
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Extraction of the sequences (quality criteria)
Database SYBASE (raw sequences + quality information + identification)

FIG. 1

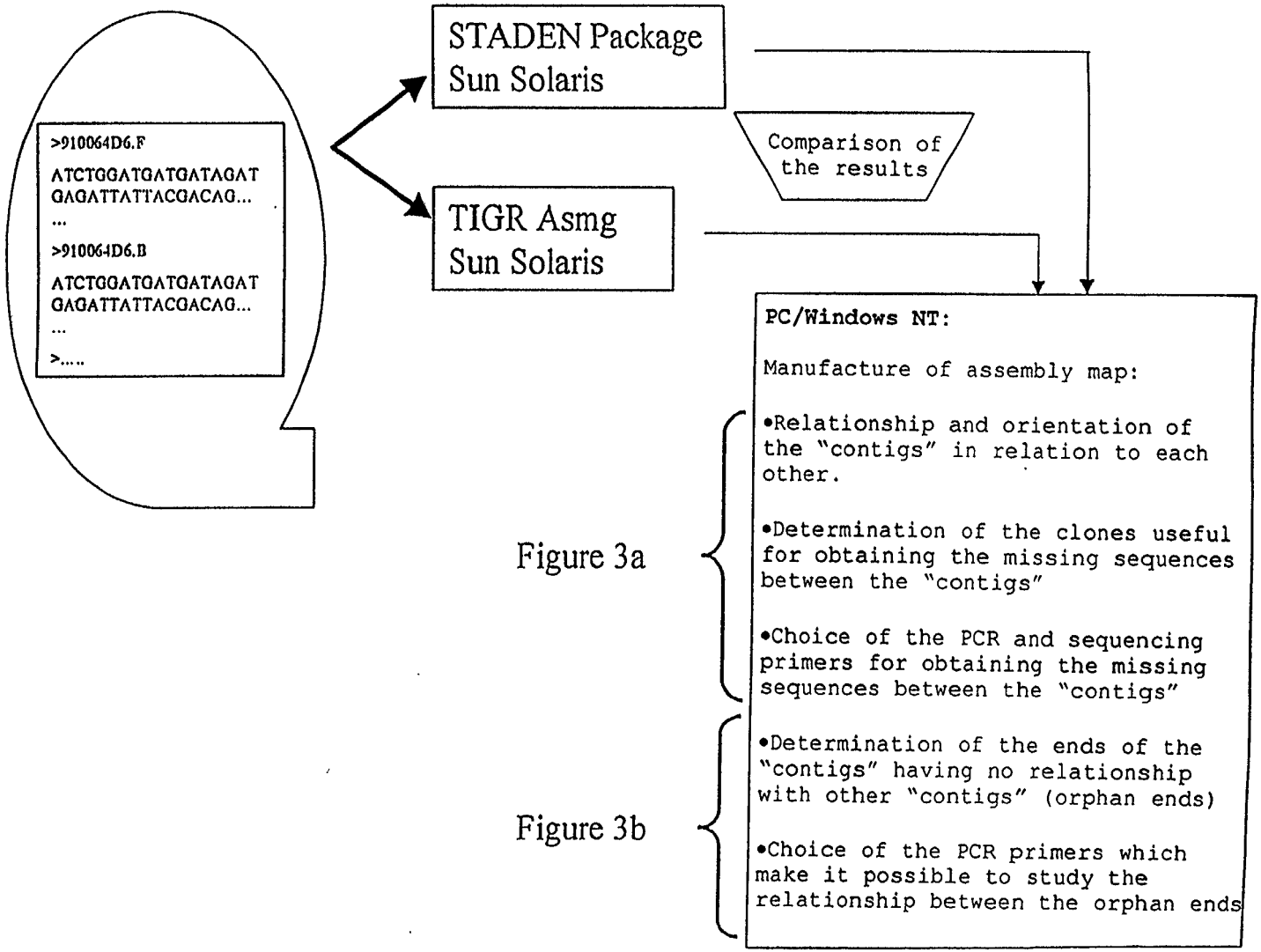
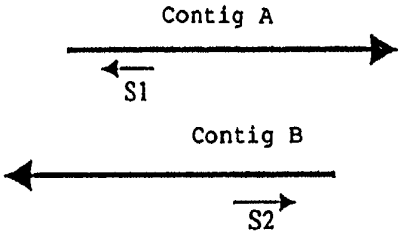


Figure 3a

Figure 3b

FIG. 2

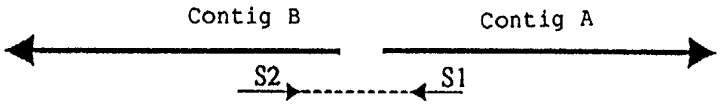
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Statistical determination of the sequences:

1- Belonging to the same clone

2- Situated on two different contigs

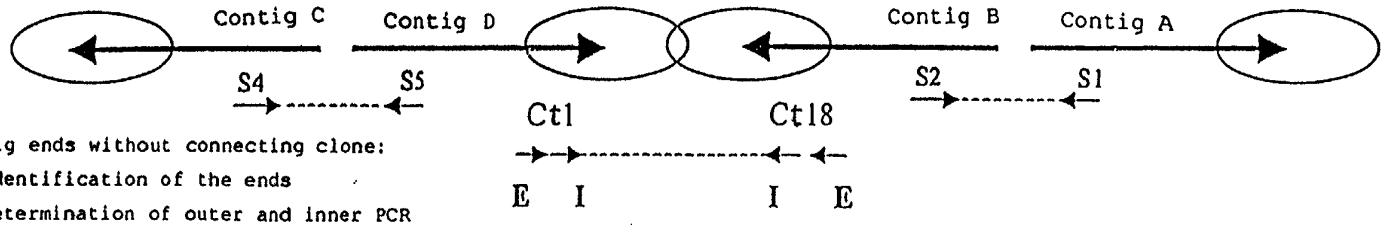


Distribution and position of the sequences on the contigs:

1- Define the arrangement of the contigs in relation to each other

2- Define the PCR primers which make it possible to fill the sequence

b.



Contig ends without connecting clone:

1- Identification of the ends

2- Determination of outer and inner PCR primers for studying the relationships between the contigs

E: outer primers

I: inner primers

FIG. 3

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below at 201 et seq. underneath my name.

I believe I am the original, first and sole inventor if only one name is listed at 201 below, or an original, first and joint inventor if plural names are listed at 201 et seq. below, of the subject matter which is claimed and for which a patent is sought on the invention entitled

CHLAMYDIA TRACHOMATIS GENOMIC SEQUENCE AND POLYPEPTIDES, FRAGMENTS THEREOF AND USES THEREOF, IN PARTICULAR FOR THE DIAGNOSIS, PREVENTION AND TREATMENT OF INFECTION

and for which a patent application:
☒ is attached hereto and includes amendment(s) filed on *(if applicable)*
☐ was filed in the United States on as Application No. *(for declaration not accompanying application)*
with amendment(s) filed on *(if applicable)*
☐ was filed as PCT international Application No. on and was amended under PCT Article 19 on *(if applicable)*

I hereby state that I have reviewed and understand the contents of the above identified application, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

EARLIEST FOREIGN APPLICATION(S), IF ANY, FILED PRIOR TO THE FILING DATE OF THE APPLICATION			
APPLICATION NUMBER	COUNTRY	DATE OF FILING (day, month, year)	PRIORITY CLAIMED
FR 97-15041	France	November 28, 1997	YES ☒ NO ☐
FR 97 - 16034	France	December 17, 1997	YES ☒ NO ☐

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

APPLICATION NUMBER	FILING DATE
60/107077	November 4, 1998

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

APPLICATION SERIAL NO.	FILING DATE	STATUS		
		PATENTED	PENDING	ABANDONED
PCT /	November 27, 1998			

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204	FULL NAME OF INVENTOR	LAST NAME	FIRST NAME	MIDDLE NAME	
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205	FULL NAME OF INVENTOR	LAST NAME	FIRST NAME	MIDDLE NAME	
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206	FULL NAME OF INVENTOR	LAST NAME	FIRST NAME	MIDDLE NAME	
	RESIDENCE & CITIZENSHIP	CITY	STATE OR FOREIGN COUNTRY	COUNTRY OF CITIZENSHIP	
	POST OFFICE ADDRESS	STREET	CITY	STATE OR COUNTRY	ZIP CODE

Attached Sheet

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201	SIGNATURE OF INVENTOR 202	SIGNATURE OF INVENTOR 203
DATE	DATE	DATE
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DATE	DATE	DATE

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Sequence Listing

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Sequence Listing

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Confidential - Filed Under Seal

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Sheet 2 of 3 Sheets

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Confidential

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Submitted - Sequence Listing

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Sequence Listing

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09/09/2004 14:39 [ ]

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Sequence Listing

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Substitute Sheet (Rule 26)

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Sheet 1 of 2 Patented

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Confidential - Subject to Protective Order

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Thr Ser Ile Ile Arg Leu Thr Pro Ser Leu Thr Leu Ser Gly Gly Gly
785                 790                 795                 800
Ser His Met Phe Gly Asp Ser Phe Val Ala Asp Leu Pro Glu His Ile
                805                 810                 815
Thr Ser Glu Gly Ile Val Gln Asn Val Gly Leu Thr His Val Trp Gly
            820                 825                 830
Pro Leu Thr Val Asn Xaa Thr Leu Cys Ala Ala Leu Asp His Asn Ala
        835                 840                 845
Met Val Arg Ile Cys Ser Lys Lys Asp His Thr Tyr Gly Lys Trp Asp
    850                 855                 860
Thr Phe Gly Met Arg Gly Thr Leu Gly Ala Ser Tyr Thr Phe Leu Glu
865                 870                 875                 880
Tyr Asp Gln Thr Met Arg Val Phe Ser Phe Ala Asn Ile Glu Ala Thr
                885                 890                 895
Asn Ile Leu Gln Arg Ala Phe Thr Glu Thr Gly Tyr Asn Pro Arg Ser
            900                 905                 910
Phe Ser Lys Thr Lys Leu Leu Asn Ile Ala Ile Pro
        915                 920
<210>4
<211>609
<212>PRT
<213>Chlamydia trachomatis
<400>4
Val Val Met Phe Pro Gln Lys Ile Thr Leu Trp Leu Tyr Pro Leu Gly
  1                 5                  10                  15
Leu Phe Ala Asn Leu Phe Phe Gly Thr Ala Phe Cys Val Gln Trp Phe
             20                  25                  30
Leu Thr Arg Lys Lys Gly Tyr Ser Val Val Pro Lys Ile Phe Trp Tyr
         35                  40                  45
Leu Ser Gly Thr Gly Ala Val Phe Met Ile Cys His Gly Phe Ile Gln
     50                  55                  60
Ser Gln Tyr Pro Ile Ala Leu Leu His Ser Phe Asn Leu Ile Ile Tyr
 65                  70                  75                  80
Phe Arg Asn Leu Asn Ile Ala Ser Leu Asn Pro Leu Pro Val Ser Lys
                 85                  90                  95
Ile Ala Ser Leu Leu Val Ser Val Ala Thr Ala Ile Thr Val Ser Phe
            100                 105                 110
Ala Ile Gly Thr Arg Tyr Leu His His Met Thr Trp Met Ala Ser Pro
        115                 120                 125
Asn Ile Leu His Leu Asn Leu Pro Glu Ala Ser Leu Ser Trp Gln Leu
    130                 135                 140
Ile Gly Cys Ile Gly Leu Thr Ile Phe Ser Leu Arg Phe Phe Ile Gln
145                 150                 155                 160
Trp Phe Tyr Leu Glu Tyr Lys Asn Gln Ser Ala Leu Pro Ala Pro Phe
                165                 170                 175
Trp Lys Ala Ser Leu Leu Gly Gly Ser Ile Cys Leu Leu Tyr Phe Leu
            180                 185                 190
Arg Thr Gly Asp Leu Val Asn Val Leu Cys Tyr Gly Cys Gly Leu Phe
        195                 200                 205
Pro Ser Leu Ala Asn Leu Arg Ile Ala Ser Arg Glu Ala Phe Arg Lys
    210                 215                 220
Pro Phe Ser Asn Ser Cys Phe Ile Ser Ala Gly Glu His Ser Gly Asp
225                 230                 235                 240
Thr Leu Gly Gly Asn Leu Leu Lys Glu Met His Ala Lys Tyr Pro Asp
                245                 250                 255
Ile His Cys Phe Gly Val Gly Gly Pro Gln Met Arg Ala Gln Asn Phe
            260                 265                 270
His Ala Leu Phe Thr Met Glu Lys Phe Gln Val Ser Gly Phe Trp Glu
        275                 280                 285
Val Leu Leu Ala Leu Pro Lys Leu Trp Tyr Arg Tyr Gln Leu Leu Tyr
    290                 295                 300
```

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Arg Asn Ile Leu Lys Thr Asn Pro Arg Thr Val Ile Cys Ile Asp Phe
305                 310                 315                 320
Pro Asp Phe His Phe Leu Leu Ile Lys Lys Leu Arg Ser Arg Gly Tyr
                325                 330                 335
Lys Gly Lys Ile Val His Tyr Val Cys Pro Ser Ile Trp Ala Trp Arg
            340                 345                 350
Pro Ser Arg Lys Thr Val Leu Glu Lys Tyr Leu Asp Leu Leu Leu Leu
        355                 360                 365
Ile Leu Pro Phe Glu Gln Asn Leu Phe Lys Asp Ser Ala Leu Arg Thr
    370                 375                 380
Val Tyr Leu Gly His Pro Leu Ser Glu Thr Ile Lys Ser Phe Ser Pro
385                 390                 395                 400
Asn Leu Asn Trp Lys Asp Gln Leu His Leu Pro Thr Asp Lys Pro Phe
                405                 410                 415
Ile Ala Ala Phe Pro Gly Ser Arg Arg Ser Asp Ile Leu Arg Asn Leu
            420                 425                 430
Thr Ile Gln Val Gln Ala Phe Gln Ala Ser Ser Leu Ala Ser Thr His
        435                 440                 445
His Leu Leu Val Ser Ser Ala Asn Pro Glu Tyr Asp His Leu Ile Leu
    450                 455                 460
Glu Val Leu Gln Gln Asn Arg Cys Leu His Ser His Ile Val Pro Ser
465                 470                 475                 480
Gln Phe Arg Tyr Glu Leu Met Arg Glu Cys Asp Phe Ala Leu Ala Lys
                485                 490                 495
Cys Gly Thr Ile Val Leu Glu Thr Ala Leu Asn Leu Thr Pro Thr Ile
            500                 505                 510
Val Thr Cys Gln Leu Arg Pro Leu Asp Thr Phe Leu Ala Lys Tyr Ile
        515                 520                 525
Phe Asn Ile Ile Leu Pro Ala Tyr Ser Leu Pro Asn Ile Ile Leu Gly
    530                 535                 540
Arg Thr Ile Phe Pro Glu Phe Ile Gly Gly Lys Lys Asp Phe Gln Tyr
545                 550                 555                 560
Glu Asp Val Ala Ala Ala Leu Asn Ile Leu Lys Thr Ser Gln Ala Gln
                565                 570                 575
Glu Lys Gln Lys Asp Ser Cys Arg Asp Val Tyr Gln Ala Ile Asn Glu
            580                 585                 590
Ser Ala Ser Ser Met Lys Glu Cys Leu Ser Leu Ile Phe Glu Thr Ala
        595                 600                 605
Ser
```

<210>5
<211>425
<212>PRT
<213>Chlamydia trachomatis
<400>5

```
Met Met Ala Cys Asn Gln Glu Leu Leu Ser Pro Arg Gly Leu Asp Leu
  1               5                  10                  15
Leu Ser Lys Asn Ser His Ser Asn Leu Thr Pro Thr Ile Phe Tyr Pro
            20                  25                  30
Ser Asp His Asn Ile Asp Leu Gln Ser Phe Ser Thr His Ala Leu Ser
        35                  40                  45
Val Val Arg Thr Leu Lys Lys Ala Gly Tyr Glu Ala Tyr Ile Val Gly
    50                  55                  60
Gly Cys Ile Arg Asp Leu Leu Leu Lys Thr Glu Pro Lys Asp Phe Asp
65                  70                  75                  80
Ile Ser Thr Ser Ala Lys Pro Glu Glu Val Lys Thr Leu Phe Lys Asn
                85                  90                  95
Cys Ile Leu Val Gly Lys Arg Phe Arg Leu Ala His Ile Arg Phe Pro
            100                 105                 110
Asn Gln Ile Ile Glu Val Ala Thr Phe Arg Ser Gly Ser Asn Glu Glu
        115                 120                 125
```

```
Asp Ser Leu Ile Thr Lys Asp Asn Leu Trp Gly Ser Ala Glu Glu Asp
    130                 135                 140
Val Leu Arg Arg Asp Phe Thr Ile Asn Gly Leu Phe Tyr Asp Pro Ser
145                 150                 155                 160
Ala Glu Ile Ile Ile Asp Tyr Thr Gly Gly Val Glu Asp Leu Lys Asn
                165                 170                 175
Arg Tyr Leu Arg Thr Ile Gly Asp Pro Phe Leu Arg Phe Lys Gln Asp
            180                 185                 190
Pro Val Arg Met Leu Arg Leu Leu Lys Ile Leu Ser Arg Tyr Ala Phe
        195                 200                 205
Thr Val Asp Pro Lys Thr Leu Glu Ala Leu Gln Glu Ser Arg His Glu
    210                 215                 220
Leu Val Lys Ser Ser Gln Pro Arg Val Phe Glu Glu Ile Ile Lys Val
225                 230                 235                 240
Leu Ser Ser Gly Glu Ser Thr Ile Phe Phe Gln Leu Ala Ser Glu His
                245                 250                 255
Arg Val Leu Glu Ile Leu Phe Pro Tyr Met Ala Lys Ala Phe Ser Leu
            260                 265                 270
Ser Lys Thr Leu Gln Asp Gln Thr Phe Ala Cys Leu Thr Ala Leu Asp
        275                 280                 285
Thr Lys Ile Gln Lys Arg Ser Phe Cys Ser Glu Arg His Phe Leu Leu
    290                 295                 300
Ala Ile Leu Leu Phe Pro Ile Val Asn Phe Asn Val Arg Tyr Lys Tyr
305                 310                 315                 320
Ser Gln Tyr Pro Thr Met Thr Ile Gln Ser Ile Phe Asp Tyr Ile Arg
                325                 330                 335
Asn Phe Leu Thr Glu Phe Phe Ala Asp Ser Phe Thr Ser Cys Ser Lys
            340                 345                 350
Lys Asn Phe Ile Leu Thr Thr Leu Leu Leu Gln Met Gln Tyr Arg Leu
        355                 360                 365
Thr Pro Leu Ser Ala Met Lys Lys Glu Lys Lys Ser Phe Phe Asn Arg
    370                 375                 380
Arg Leu Leu Arg His Ala Tyr Phe Arg Glu Ala Leu Tyr Leu Leu Glu
385                 390                 395                 400
Ile Arg Ser Lys Val Tyr Leu Lys Val Glu Ala Thr Tyr Gly Glu Trp
                405                 410                 415
Leu Lys His Tyr Glu Leu Ala Ser Glu
            420                 425
```

<210>6
<211>453
<212>PRT
<213>Chlamydia trachomatis
<400>6

```
Met Ser Ala Phe Leu Ser Phe Leu Thr Ala Phe Asp Asp Phe Ile Trp
  1               5                  10                  15
Ser Tyr Ile Ala Phe Val Leu Ile Leu Leu Leu Gly Val Leu Phe Thr
             20                  25                  30
Cys Lys Ser Lys Phe Ala Gln Phe Thr Gln Leu Pro Ala Phe Phe Lys
         35                  40                  45
Leu Phe Tyr His Phe Ser Lys Glu Ala Ser Ser Lys Lys Glu Asn Gln
     50                  55                  60
Lys Lys Gly Val His Pro Leu Lys Val Phe Phe Ala Ser Ala Gly Gly
 65                  70                  75                  80
Asn Ile Gly Ile Gly Asn Val Val Gly Ile Val Thr Ala Ala Ser Val
                 85                  90                  95
Gly Gly Pro Gly Ala Leu Phe Trp Val Trp Ile Ala Gly Ile Leu Gly
            100                 105                 110
Ser Ile Val Lys Tyr Ser Glu Val Tyr Leu Gly Ile Lys Phe Arg Gln
        115                 120                 125
Ser Asp Ala Asn Asn Val Tyr His Gly Gly Pro Met Phe Phe Leu Asp
    130                 135                 140
```

Lys Ala Tyr Arg Thr Arg Ile Val Ser Val Ile Val Ala Val Leu Leu
145 150 155 160
Cys Ile Tyr Gly Val Glu Ile Tyr Gln Phe Ser Ile Ile Ala Asn Thr
165 170 175
Leu Ala Ser Cys Trp Asp Val Pro Lys Leu Met Ala Ile Ala Ser Leu
180 185 190
Leu Phe Leu Val Met Tyr Ala Val Gln Gly Gly Leu Gln Arg Ile Gly
195 200 205
Lys Ile Cys Ser Leu Val Leu Pro Phe Phe Met Leu Val Tyr Cys Gly
210 215 220
Met Ala Phe Tyr Ile Leu Ile Gln Glu Ile His Thr Leu Pro Ala Leu
225 230 235 240
Phe Ser Ser Ile Phe Arg Ser Ala Phe Thr Gly His Gly Ala Ile Gly
245 250 255
Gly Phe Ala Gly Cys Thr Val Ala Ser Thr Ile Arg Gln Gly Leu Ser
260 265 270
Arg Ala Ala Tyr Ser Gly Asp Ile Gly Ile Gly Phe Asp Ser Ile Ile
275 280 285
Gln Ser Glu Thr Ser Ala Thr Asn Pro Gln Thr Gln Ala Gln Leu Ser
290 295 300
Ile Val Gly Val Ile Val Asp Asn Leu Val Cys Thr Leu Ser Leu Leu
305 310 315 320
Ile Val Leu Ala Ser Gly Val Trp His Arg Ala Gly Leu Glu Gly Ser
325 330 335
Glu Ile Val Glu Gln Ala Leu Ser Ser Tyr Phe Pro Tyr Ile Arg Val
340 345 350
Phe Leu Pro Ala Phe Leu Phe Ala Thr Gly Tyr Thr Thr Ile Ile Ser
355 360 365
Tyr Phe Leu Val Gly Lys Lys Cys Ala Asn Phe Ile Cys Gly Asn Lys
370 375 380
Gly Ser Lys Phe Tyr Thr Val Tyr Gly Ile Ile Ala Leu Pro Ala Phe
385 390 395 400
Cys Phe Leu Pro Gln Asp Thr Ala Leu Leu Val Met Ser Val Ser Gly
405 410 415
Ala Leu Leu Leu Cys Leu Asn Leu Leu Gly Val Phe Leu Met Arg Lys
420 425 430
Glu Leu Ile Phe Pro Lys Lys Glu Ala Glu Thr Leu Glu Val Ser Glu
435 440 445
Ser Thr Leu Ser Ser
450

<210>7
<211>167
<212>PRT
<213>Chlamydia trachomatis
<400>7

Met Pro Thr Arg Ser Leu Pro Thr Phe Leu Thr Leu Leu Leu Leu Ala
1 5 10 15
Ser Ile Asp Trp Val Ser Lys Leu Val Val Leu Leu Lys Ser Cys Gln
20 25 30
Leu Ser Pro His Ser Ser Ala Phe Leu Tyr Ser Tyr Val Trp Gly His
35 40 45
Phe Ser Phe Leu Ile Ile Pro Ser Phe Asn Glu Gly Ala Ala Phe Gly
50 55 60
Leu Phe Ala Gln Tyr Lys Ile Pro Leu Leu Ile Phe Arg Val Cys Val
65 70 75 80
Ile Leu Gly Leu Ala Leu Phe Leu Arg Ile Lys Tyr Lys Ser Leu His
85 90 95
Arg Arg Thr Arg Ile Ala Leu Thr Leu Ile Leu Ala Gly Ala Leu Gly
100 105 110
Asn Val Gly Asp Ile Leu Leu His Gly Lys Val Val Asp Phe Leu Phe
115 120 125

Leu Ser Tyr Tyr Ser Trp Arg Phe Pro Ser Phe Asn Leu Ala Asp Ala
130 135 140
Phe Ile Ser Ile Gly Thr Leu Leu Leu Ile Gly His Leu Tyr Phe Thr
145 150 155 160
Lys Glu Ser Lys Lys Cys Phe
165

<210>8
<211>135
<212>PRT
<213>Chlamydia trachomatis
<400>8
Met Val Lys Asn Lys His Glu Lys Glu Asn Cys Met Pro Leu Thr Asp
1 5 10 15
Glu Glu Ile Ala Asn Phe Lys Thr Arg Leu Leu Glu Met Lys Ala Lys
20 25 30
Leu Ser His Thr Leu Glu Gly Asn Ala Gln Glu Val Lys Lys Pro Asn
35 40 45
Glu Ala Thr Gly Tyr Ser Gln His Gln Ala Asp Gln Gly Thr Asp Thr
50 55 60
Phe Asp Arg Thr Ile Ser Leu Glu Val Thr Thr Lys Glu Tyr Lys Leu
65 70 75 80
Leu Arg Gln Ile Asp Arg Ala Leu Glu Lys Ile Glu Glu Ala Ser Tyr
85 90 95
Gly Ile Cys Asp Val Ser Gly Glu Glu Ile Pro Leu Ala Arg Leu Met
100 105 110
Ala Ile Pro Tyr Ala Thr Met Thr Val Lys Ser Gln Glu Lys Phe Glu
115 120 125
Lys Gly Leu Leu Ser Gly Asn
130 135

<210>9
<211>154
<212>PRT
<213>Chlamydia trachomatis
<400>9
Met Leu Cys Pro Phe Cys Asn His Gly Glu Leu Lys Val Ile Asp Ser
1 5 10 15
Arg Asn Ala Pro Glu Ser Asn Ala Ile Lys Arg Arg Arg Glu Cys Leu
20 25 30
Arg Cys Ser Gln Arg Phe Thr Thr Phe Glu Thr Val Glu Leu Thr Val
35 40 45
Gln Val Leu Lys Arg Asp Gly Arg Tyr Glu Asn Phe Gln Glu Ser Lys
50 55 60
Leu Val Asn Gly Leu Lys Ala Ala Ser Ser His Thr Arg Ile Gly Gln
65 70 75 80
Glu Gln Val Gln Ala Ile Ala Ser Asn Ile Lys Gln Asp Leu Leu Gly
85 90 95
Lys Gln Asn Arg Glu Ile Ser Thr Lys Glu Ile Gly Glu Leu Val Met
100 105 110
Lys Tyr Leu Lys Lys Ala Asp Met Ile Ala Tyr Ile Arg Phe Ala Cys
115 120 125
Val Tyr Arg Arg Phe Lys Asp Val Gly Glu Leu Met Glu Val Leu Leu
130 135 140
Ser Ala Thr Pro Asp Gly Glu Lys Gln Thr
145 150

<210>10
<211>201
<212>PRT
<213>Chlamydia trachomatis
<400>10
Leu Ser Met Phe Ser Gly Ile Ile Gln Glu Val Ala Arg Val Asp Leu
1 5 10 15

Sequence Listing

```
Ile His His Leu Gly Asp Ser Met Glu Ile Gly Val Phe Ala Arg Lys
            20                  25                  30
Leu Ile Asp Val Val Pro Gly Ser Ser Phe Ser Val Asp Gly Ile Cys
        35                  40                  45
Leu Thr Leu Val Lys Arg Gln Tyr Glu Leu Leu Phe Phe Asp Val Thr
    50                  55                  60
Glu Glu Thr Met Ala Trp Thr Thr Ile Lys Asp Tyr Thr Val Gly Thr
65                  70                  75                  80
Met Val Asn Leu Glu Arg Ser Val Arg Leu Gly Asp Glu Ile Gly Gly
                85                  90                  95
His Phe Val Ser Gly His Val Cys Gly Ile Gly Thr Ile Ile Ala Ile
            100                 105                 110
Glu Lys Ser Tyr Met Phe Phe Lys Ala Pro Ala Asn Leu Val Pro Tyr
        115                 120                 125
Ile Leu Glu Lys Gly Phe Ile Ala Ile Asp Gly Ile Ser Leu Thr Ile
    130                 135                 140
Ala Arg Val Lys Gly Asp Ile Phe Ser Val Ser Leu Ile Pro Glu Thr
145                 150                 155                 160
Arg Ala Arg Thr Ser Leu Gly Tyr Lys Gln Val Gly Ala His Val Asn
                165                 170                 175
Met Glu Pro Asp Met Met Thr Lys Met Gln Val Asp Thr Ile Met Arg
            180                 185                 190
Phe His Ala Glu Lys Glu Ile Ser Lys
        195                 200
<210>11
<211>296
<212>PRT
<213>Chlamydia trachomatis
<400>11
Tyr Asp Asp Lys Asn Ala Gly Gly His Asn Tyr Ala Phe Pro Cys Arg
  1                 5                  10                  15
Lys Arg Asp Gln Gln Met Met Asp Tyr Glu Leu Leu Asp Ser Gly Asp
            20                  25                  30
Gly Lys Lys Leu Glu Arg Phe Lys Asp Val Cys Leu Ile Arg Ser Ser
        35                  40                  45
Ala Thr Ala Ile Trp Pro Lys Ser Ser Pro Ser Leu Trp Gly Gln Tyr
    50                  55                  60
Ser Ala Glu Phe Val Arg Met Gly Glu Gln Gly Gln Trp Arg Tyr Arg
65                  70                  75                  80
Asn Arg Asn Leu Lys Glu Trp Trp Ile Thr Ile Asp Ser Val Ser Cys
                85                  90                  95
Leu Leu Lys Leu Thr Pro Phe Gly His Val Gly Ile Phe Pro Glu His
            100                 105                 110
Ala Gly Phe Trp Lys Asp Leu Gln Pro Ser Val Ala Lys Pro Ser Cys
        115                 120                 125
Arg Val Leu Asn Leu Phe Ala Tyr Thr Gly Ala Ser Ser Ile Phe Cys
    130                 135                 140
Ala Gln Gln Gly Ala Thr Val Tyr His Val Asp Ala Ser Lys Ala Ala
145                 150                 155                 160
Val Lys Trp Ala Gln Lys Asn Val Glu Gly Asn Ala Phe Gln Asp Lys
                165                 170                 175
Arg Val Phe Trp Ile Ile Glu Asp Val Phe Ser Phe Leu Lys Lys Glu
            180                 185                 190
Ile Arg Arg Gly Lys Thr Tyr Asp Val Ile Leu Leu Asp Pro Pro Thr
        195                 200                 205
Tyr Gly Arg Gly Pro Asp Gly Glu Thr Phe Lys Ile Asp Arg Asp Phe
    210                 215                 220
Phe Pro Leu Leu Glu Leu Cys Ser Gln Leu Leu Ser Ser Ser Phe Ser
225                 230                 235                 240
His Met Leu Ile Thr Ser His Thr Pro Gly His Thr Pro Glu Phe Leu
                245                 250                 255
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```
His Cys Leu Ala Arg Arg Ala Leu Pro Met Leu Pro Leu Gln Gly Trp
            260                 265                 270
Arg Leu Gly Glu Asn Phe Cys Gly Glu Gly Asn Gln Arg Leu Pro Ser
        275                 280                 285
Gly Val Phe Ala Gln Trp Ser Leu
    290                 295
<210>12
<211>224
<212>PRT
<213>Chlamydia trachomatis
<400>12
Met Glu Phe Ile Gly Lys Asn Asn Ala Arg Val Lys Ser Ala Leu Ala
  1               5                  10                  15
Leu Lys Arg Gln Arg Ala Arg Asn Gly Thr Tyr Phe Leu Leu Glu Gly
             20                  25                  30
Phe Arg Glu Ile His Arg Ala Leu Ile Ser Gly Tyr Arg Cys Ser His
         35                  40                  45
Val Phe Cys Gly Glu Leu Ile Ala Asp Lys Glu Ile Ala Leu Asp Arg
     50                  55                  60
Glu Leu Thr Ser Leu Gly Ile Glu Lys Leu Tyr Cys Ser Lys Asp Ile
 65                  70                  75                  80
Leu Glu Lys Leu Ser Phe Lys Glu Asn Pro Glu Asn Phe Ile Ala Val
                 85                  90                  95
Phe Glu Lys Lys Glu Leu Ser Cys Gln Glu Phe Leu Gly Leu Gln Arg
            100                 105                 110
Lys Asn Gln Ala Pro Phe Tyr Leu Ile Val Glu Gln Ala Glu Lys Pro
        115                 120                 125
Gly Asn Ile Gly Ala Leu Leu Arg Ile Ala Asp Gly Ala Gly Val Asp
    130                 135                 140
Gly Val Ile Leu Cys Asp Pro Val Val Asp Leu Tyr Asn Pro Asn Val
145                 150                 155                 160
Ile Arg Ser Ser Leu Gly Thr Val Phe Thr Met Pro Val Trp Gln Ala
                165                 170                 175
Ser Leu Lys Glu Val Leu Asp Leu Val His Gln Gln Glu Trp Gln Val
            180                 185                 190
Phe Thr Thr Thr Pro Ser Ala Gln Thr Phe Tyr Phe Asp Gln Asp Phe
        195                 200                 205
Cys Gln Pro Thr Val Val Val Phe Gly Ser Glu Lys Asp Gly Val Ala
    210                 215                 220
<210>13
<211>419
<212>PRT
<213>Chlamydia trachomatis
<400>13
Leu Ile Phe Asn Val Leu Tyr Ala Ile Leu Gln Asp Ala Leu Val Trp
  1               5                  10                  15
Lys Ala Thr Trp Val Lys Arg Thr Lys Ser Leu Ser Gln Pro Phe Arg
             20                  25                  30
Val Val Ile Val Phe Ala Gly Cys Ser Phe Arg Lys Asn Leu Ser Arg
         35                  40                  45
Ala Pro Met Arg Phe Ser Phe Phe Ser Gly Ile Arg Asp Leu Phe Arg
     50                  55                  60
His Leu Ile Ile Ser Ala Thr Ser Gly Ala Leu Ser Asp Arg Leu Gly
 65                  70                  75                  80
Trp Leu Trp Ala Val Ile Ala Arg Val Phe Ser Gly Ser Val Trp Leu
                 85                  90                  95
Arg His Lys Ile Ala Lys Ser Pro His Gln Val Gln Ala Thr Val Val
            100                 105                 110
Ser Val Gly Asn Ile Val Val Gly Gly Thr Gly Lys Thr Pro Leu Val
        115                 120                 125
Leu Trp Leu Ala Gln Ala Leu His Glu Arg Gly Leu Ser Cys Ala Val
```

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```
    130                 135                 140
Leu Ser Arg Gly Tyr Lys Gly Lys Tyr Ser Lys Lys Lys Ala Phe Thr
145                 150                 155                 160
Ile Val Asn Pro Ala Leu His Thr Ala Ser Cys Val Gly Asp Glu Pro
                165                 170                 175
Leu Leu Leu Ala Lys His Leu Pro Ser Gly Ala Val Arg Ile Gln Lys
            180                 185                 190
Asp Arg Lys Thr Leu Ala Glu Lys Ser Ala Gly Asp Phe Asp Val Leu
        195                 200                 205
Ser Leu Asp Asp Gly Phe Gln Tyr Asn Arg Leu His Lys Asp Val Glu
    210                 215                 220
Ile Val Leu Val Asn Gly Ser Asp Pro Phe Gly Gly Gly Ser Phe Phe
225                 230                 235                 240
Pro Lys Gly Arg Leu Arg Asp Phe Pro Glu Arg Leu Ala Lys Ala Asp
                245                 250                 255
Tyr Val Met Ile Asn Gly Arg Cys Ser Pro Ser Asp Gln Arg Glu Leu
            260                 265                 270
Asp Arg Leu His Pro Glu Xaa Lys Ile Val Ile Glu Pro Gln Ile Ser
        275                 280                 285
Glu Ile Val Trp Met Asn Gln Ser Val Asn Met Pro Arg Asp His Trp
    290                 295                 300
Glu Gly Leu Gly Val Gly Val Phe Cys Gly Leu Gly Phe Pro Lys Gly
305                 310                 315                 320
Phe Leu Ala Met Leu Arg Asp Ala Gly Ile His Val Leu Gly Thr Tyr
                325                 330                 335
Leu Leu Pro Asp His Val Gly Ile Thr Lys Gln Glu Leu Glu Leu Phe
            340                 345                 350
Cys Lys Lys Ile Ile Leu Arg Gln Gly Val Gly Ile Leu Cys Thr Glu
        355                 360                 365
Lys Asp Ser Val Lys Ile Gly Ala Leu Ala Glu Glu Ile Ser Leu Pro
    370                 375                 380
Val Gly Glu Xaa Arg Met Arg Phe Ser Cys Val Cys Asn Glu Arg Arg
385                 390                 395                 400
Met Xaa Ala Met Leu Asp Ala Ile Glu Ser Ile Gln Lys Asn Lys Arg
                405                 410                 415
Val Thr Thr
```

<210>14
<211>294
<212>PRT
<213>Chlamydia trachomatis
<400>14

```
Glu Val Leu Gly Leu Tyr Leu Ala Thr Thr Ser Val Ala Ile Gly Ile
  1               5                  10                  15
Gly Leu Ala Phe Ala Leu Phe Phe Ser Pro Gly Lys Gly Cys Asp Leu
             20                  25                  30
Gln Gly Phe Asn Ala Val Asp Leu Ala Ser Ser Gly Ser Ser Gly Gly
         35                  40                  45
Met Asn Phe Leu Ala Thr Phe Ala Gln Val Phe Pro Ser Asn Pro Leu
     50                  55                  60
Arg Ser Phe Val Glu Gly Asn Ile Leu Gln Ile Ile Ile Phe Ala Leu
 65                  70                  75                  80
Phe Thr Gly Ile Ala Met Arg Leu Ala Gly Glu Ala Ala Arg Pro Val
                 85                  90                  95
Glu Arg Phe Val His Gly Cys Asn Glu Ile Met Leu Arg Met Val Asn
            100                 105                 110
Met Ile Met Ser Phe Ala Pro Tyr Gly Val Ala Ala Ser Met Ala Trp
        115                 120                 125
Ile Ser Gly Asn His Gly Leu Thr Val Leu Leu Gln Leu Gly Lys Phe
    130                 135                 140
Leu Val Val Tyr Tyr Leu Ala Cys Ile Cys His Ala Ile Leu Ile Phe
```

145 150 155 160
Gly Gly Leu Val Arg Leu Gly Cys Arg Ser Ser Phe Ser Lys Phe Leu
165 170 175
Ser Ser Met Met Asp Ala Ile Ser Cys Ala Val Ser Thr Ala Ser Ser
180 185 190
Ser Ala Thr Leu Pro Val Thr Met Arg Cys Val Ser Lys Asn Leu Gly
195 200 205
Val Ser Ser Glu Val Ser Gly Phe Val Leu Pro Leu Gly Ala Thr Val
210 215 220
Asn Met Asn Gly Thr Ala Ile Xaa Gln Gly Met Ala Ala Val Phe Ile
225 230 235 240
Ala Xaa Xaa Tyr Asn Cys Pro Leu Ser Leu Thr Ser Leu Leu Leu Leu
245 250 255
Val Val Thr Ala Thr Phe Ser Ala Val Gly Ser Ala Gly Val Pro Gly
260 265 270
Gly Gly Met Ile Thr Leu Gly Ser Val Leu Thr Ser Val Gly Leu Pro
275 280 285
Ile Gln Gly Thr Gln Ser
290

<210>15
<211>71
<212>PRT
<213>Chlamydia trachomatis
<400>15
Met Phe Glu Phe Arg Phe Pro Lys Ile Gly Glu Thr Ala Ser Gly Gly
1 5 10 15
Ile Val Val Arg Trp Leu Lys Gln Val Gly Asp Pro Val Gln Lys Asp
20 25 30
Glu Pro Leu Ile Glu Val Ser Thr Asp Lys Ile Ala Thr Glu Leu Ala
35 40 45
Pro Ser Gln Ala Gly Ile Leu Glu Glu Cys Leu Val Gln Glu Gly Glu
50 55 60
Glu Phe Ser Leu Glu Xaa Phe
65 70

<210>16
<211>346
<212>PRT
<213>Chlamydia trachomatis
<400>16
Asp Ser Tyr Arg Val Ser Ser Phe Ser Ser Trp His Phe Gly Gly Val
1 5 10 15
Pro Gly Ser Gly Arg Gly Arg Val Phe Pro Gly Xaa Ile Leu Ala Arg
20 25 30
Leu Arg Glu Thr Ala Ala Ala Asn Thr Pro Val Lys Ser Pro Val Glu
35 40 45
Asn Pro Val Arg Glu Glu Asn His Ser Val Asp Arg Glu Gln Lys Trp
50 55 60
Leu Ser Pro Ala Val Leu Gly Phe Ala Gln Arg Glu Gly Leu Asp Leu
65 70 75 80
Gln Glu Leu Gln Lys Ile Ser Gly Thr Gly Glu Gly Gly Arg Ile Thr
85 90 95
Arg Lys Asp Val Glu Arg Tyr Leu Ser Asp Lys Arg Glu Pro Arg Asp
100 105 110
Pro Ile Cys Ser Lys Glu Glu Asn Arg Ile Pro Leu Ser Pro Leu Arg
115 120 125
Arg Ala Ile Ala Ser Ser Leu Arg Gln Ser Ser Glu Glu Val Pro His
130 135 140
Ala Ser Leu Val Val Asp Val Asp Val Thr Asp Leu Met Asn Leu Ile
145 150 155 160
Ser Ala Glu Arg Glu Arg Phe Thr Ala Ala His Gly Val Lys Leu Thr
165 170 175

```
Ile Thr Ser Phe Ile Ile Gln Cys Leu Ala Lys Ser Leu Glu Gln Phe
            180                 185                 190
Pro Leu Leu Asn Gly Ser Leu Asp Gly Asp Thr Ile Val Leu Lys Lys
        195                 200                 205
Ala Ile Asn Val Gly Val Ala Val Asn Leu Asn Lys Glu Gly Val Val
    210                 215                 220
Val Pro Val Ile His Asn Cys Gln Asp Arg Gly Leu Val Ser Ile Ala
225                 230                 235                 240
Lys Val Leu Ala Asp Leu Ser Ser Arg Ala Arg Ser Asn Lys Leu Asp
                245                 250                 255
Ser Ser Glu Thr Lys Gly Gly Ser Val Thr Val Thr Asn Phe Gly Met
            260                 265                 270
Thr Gly Ala Leu Ile Gly Met Pro Ile Ile Arg Tyr Pro Glu Val Ala
        275                 280                 285
Ile Leu Gly Ile Gly Thr Ile Gln Lys Arg Val Val Val Arg Asp Asp
    290                 295                 300
Asp Ser Leu Ala Ile Arg Lys Met Met Tyr Val Thr Leu Thr Phe Asp
305                 310                 315                 320
His Arg Val Leu Asp Gly Ile Tyr Gly Gly Glu Phe Leu Thr Ala Leu
                325                 330                 335
Lys Asn Arg Leu Glu Ser Val Thr Met Ser
            340                 345
```

<210>17
<211>169
<212>PRT
<213>Chlamydia trachomatis
<400>17

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Val Lys Val Met Tyr Val Pro Gly Ile Ala Glu Asn Leu Cys Leu Asp
  1               5                  10                  15
Ile Phe His Lys Gln Lys Gln Val Ile Ser Gln Tyr Phe Ala Ser Phe
            20                  25                  30
His Tyr Asp Cys Val His Gln Leu Thr Glu Lys Leu Leu Cys His Gln
        35                  40                  45
Gly Ser Val Phe Phe Ser Gly Ile Gly Lys Ser Gly Cys Ile Ala Arg
    50                  55                  60
Lys Leu Val Ala Thr Met Gln Ser Phe Gly Glu Lys Ala Phe Phe Leu
65                  70                  75                  80
Ser Gly Asp Leu Leu His Gly Asp Leu Gly Val Val Ser Pro Gly Asp
                85                  90                  95
Ile Val Cys Leu Phe Ser Asn Ser Gly Glu Thr Arg Glu Ile Leu Glu
            100                 105                 110
Trp Ile Pro His Leu Lys Asn Arg Pro Ile Phe Leu Val Gly Ile Thr
        115                 120                 125
Ala Ala Pro Cys Ser Ser Leu Ala Ala Phe Ser Asp Phe Val Val Val
    130                 135                 140
Leu Pro Lys Leu Glu Glu Leu Asp Pro Phe Asp Leu Asn Ala Tyr Asn
145                 150                 155                 160
Leu Asn His Met Pro Ile Thr Phe Phe
                165
```

<210>18
<211>110
<212>PRT
<213>Chlamydia trachomatis
<400>18

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Ala Leu Arg Ser Lys Gly Ser Asn Ser Ser Asn Phe Gly Ser Thr Thr
  1               5                  10                  15
Thr Lys Ser Glu Lys Ala Ala Lys Leu Glu His Gly Ala Ala Val Ile
            20                  25                  30
Pro Thr Arg Lys Met Gly Leu Phe Phe Lys Cys Gly Ile His Ser Lys
        35                  40                  45
Ile Ser Arg Val Ser Pro Leu Phe Glu Asn Arg Gln Thr Ile Ser Pro
```

```
     50                  55                  60
Gly Glu Thr Thr Pro Lys Ser Pro Trp Arg Arg Ser Pro Glu Arg Lys
 65                  70                  75                  80
Lys Ala Phe Ser Pro Lys Asp Cys Ile Val Ala Thr Asn Leu Arg Ala
                85                  90                  95
Met Gln Pro Leu Phe Pro Ile Pro Glu Lys Asn Thr Asp Pro
            100                 105                 110
```

<210>19
<211>258
<212>PRT
<213>Chlamydia trachomatis
<400>19

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Gly Lys Ile Ser Met His Asp Ala Leu Gln Ser Ile Leu Ala Ile Gln
  1               5                  10                  15
Glu Leu Asp Ile Lys Met Ile Arg Leu Met Arg Val Lys Lys Glu His
            20                  25                  30
Gln Asn Glu Leu Ala Lys Ile Gln Ala Leu Lys Thr Asp Ile Arg Arg
        35                  40                  45
Lys Val Glu Glu Lys Glu Gln Glu Met Glu Lys Leu Lys Asp Gln Ile
     50                  55                  60
Lys Gly Gly Glu Lys Arg Ile Gln Glu Ile Ser Asp Gln Ile Asn Lys
 65                  70                  75                  80
Leu Glu Asn Gln Gln Ala Ala Val Lys Lys Met Asp Glu Phe Asn Ala
                85                  90                  95
Leu Thr Gln Glu Met Thr Ala Ala Asn Lys Glu Arg Arg Thr Leu Glu
            100                 105                 110
His Gln Leu Ser Asp Leu Met Asp Lys Gln Ala Gly Ser Glu Asp Leu
        115                 120                 125
Leu Ile Ser Leu Lys Glu Ser Leu Ser Ser Thr Glu Asn Ser Ser Ser
    130                 135                 140
Ala Ile Glu Glu Glu Ile Arg Glu Asn Ile Arg Lys Ile Asn Glu Glu
145                 150                 155                 160
Gly Arg Ser Leu Leu Ser Gln Arg Thr Gln Leu Lys Glu Thr Thr Asp
                165                 170                 175
Pro Glu Leu Phe Ser Val Tyr Glu Arg Leu Leu Asn Asn Lys Lys Asp
            180                 185                 190
Arg Val Val Val Pro Ile Glu Asn Arg Val Cys Ser Gly Cys His Ile
        195                 200                 205
Ala Leu Thr Pro Gln His Glu Asn Leu Val Arg Lys Gln Asp His Leu
    210                 215                 220
Val Phe Cys Glu His Cys Ser Arg Ile Leu Tyr Trp Gln Glu Leu Gln
225                 230                 235                 240
Ala Pro Ser Ala Glu Gly Ala Thr Thr Lys Arg Arg Arg Arg Arg Thr
                245                 250                 255
Ala Val
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<210>20
<211>695
<212>PRT
<213>Chlamydia trachomatis
<400>20

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Leu Val Gly Lys Ala Lys Asn Lys Lys Lys Phe Leu Lys Asn Arg Lys
  1               5                  10                  15
Gln Val Leu Val Pro Gly Thr Leu Phe Val His Ser Arg Lys Gly Phe
            20                  25                  30
Gly Phe Val Ser Pro Asp Gln Pro Glu Leu Tyr Pro Phe Asp Ile Phe
        35                  40                  45
Ile Ser Ala Ser Asp Leu Lys Gly Ala Leu Asp Gly Asp His Val Leu
     50                  55                  60
Val Ala Leu Pro Phe Ser Leu Arg Gly Gly Glu Lys Arg Lys Gly Val
 65                  70                  75                  80
```

```
Ile His Lys Val Leu Ser Arg Gly Lys Thr Val Leu Val Gly Thr Ile
                 85                  90                  95
Val Ser Leu Ile Asn Pro Thr Leu Ala Met Val Cys Val Asn Thr Ile
            100                 105                 110
Gly Pro Glu His Pro Leu Lys Ala Glu Leu Leu Pro Lys Arg Thr Tyr
        115                 120                 125
Lys Leu Gly Asp Arg Leu Leu Leu Lys Thr Pro Val Trp Lys Glu Asn
    130                 135                 140
Tyr Pro Ser Lys Glu Pro Pro Pro Leu Ala Met Leu Glu Phe Ile Gly
145                 150                 155                 160
Asn Ile Ser Asn Ala Lys Thr Asp Phe Pro Val Ile Lys Ala Glu Phe
                165                 170                 175
Ser Ile Thr Glu Glu Phe Pro Asp Ala Val Val Gln Glu Ala Ser Gln
            180                 185                 190
Phe Leu Gln Lys His Val Thr Gln Ala Leu His Ser Arg Lys Asp Leu
        195                 200                 205
Arg Asp Leu Leu Cys Phe Thr Ile Asp Ser Ser Ser Ala Lys Asp Phe
    210                 215                 220
Asp Asp Ala Val Ser Leu Thr Tyr Asp His Glu Gly Asn Tyr Ile Leu
225                 230                 235                 240
Gly Val His Ile Ala Asp Val Ser His Tyr Val Thr Pro Asn Ser Ala
                245                 250                 255
Leu Asp Arg Glu Ala Ala Lys Arg Cys Asn Ser Ile Tyr Phe Pro Gly
            260                 265                 270
Lys Val Ile Pro Met Leu Pro Ser Ala Leu Ser Asp Asn Leu Cys Ser
        275                 280                 285
Leu Lys Pro Asn Val Asp Arg Leu Ala Val Ser Val Phe Met Thr Phe
    290                 295                 300
Ser Lys Glu Gly Phe Leu Ser Asp Tyr Arg Ile Leu Arg Ser Val Ile
305                 310                 315                 320
Arg Ser Lys Tyr Arg Met Thr Tyr Asp Glu Val Asp Glu Ile Ile Glu
                325                 330                 335
Lys Lys Gln Thr His Pro Ile Ser Lys Thr Ile Leu Lys Met Ala Glu
            340                 345                 350
Leu Ser Arg Ile Phe Ser Asp Ile Arg Glu Gln Arg Gly Cys Thr Arg
        355                 360                 365
Leu Val Leu Pro Ser Phe Thr Met Ser Leu Asp Asn Leu Gln Glu Pro
    370                 375                 380
Val Ala Leu Ile Glu Asn Lys Gln Thr Ala Ala His Lys Leu Ile Glu
385                 390                 395                 400
Glu Phe Met Leu Lys Ala Asn Glu Val Ile Ala Tyr His Ile Ser His
                405                 410                 415
Gln Gly Ile Thr Met Pro Phe Arg Thr His Glu Pro Pro Asn Glu Glu
            420                 425                 430
Ser Leu Leu Val Phe Gln Glu Thr Ala Lys Ala Met Gly Phe Thr Ile
        435                 440                 445
Thr Gln Thr Pro Ala Gln Glu Pro Asp Tyr Gln Tyr Leu Leu Gln Glu
    450                 455                 460
Thr Thr Ala Gly His Pro Leu Glu Pro Ile Leu His Ser Gln Phe Val
465                 470                 475                 480
Arg Ser Met Lys Thr Ala Ser Tyr Ser Thr Glu Asn Lys Gly His Tyr
                485                 490                 495
Gly Leu Cys Leu Asp Tyr Tyr Thr His Phe Thr Ser Pro Ile Arg Arg
            500                 505                 510
Tyr Val Asp Leu Ile Val His Arg Leu Leu Phe His Ser Leu Ser Val
        515                 520                 525
Glu Glu Glu His Leu Glu Gln Ile Val Arg Ala Cys Ser Ser Gln Glu
    530                 535                 540
Arg Ile Ala Ala Lys Ala Glu Gly Ala Phe Val Asn Ile Lys Lys Ala
545                 550                 555                 560
Arg Phe Leu Lys Lys Phe Ile Glu Glu Gln Pro Ala Thr Leu Tyr Lys
```

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                565                 570                 575
Ala Phe Ile Ile Thr Ala Ser Pro Glu Gly Ile Ser Phe Val Leu Pro
            580                 585                 590
Glu Phe Cys His Glu Gly Phe Ile Pro Ala Ala Lys Leu Pro Gln Ala
        595                 600                 605
Tyr Val Leu Gln Thr Lys Ile Gly Leu Glu Glu Leu Pro Glu His Leu
    610                 615                 620
Arg Pro Gly Ala Val Ile Ser Val Gln Leu Ala Ser Val Thr Leu Leu
625                 630                 635                 640
Thr Gln Ser Ile Glu Trp Thr Leu Val Glu Ala Thr Thr Lys Ala Lys
                645                 650                 655
Ala Lys Arg Thr Ser Lys Lys Lys Lys Thr Glu Ser Val Thr Thr Lys
            660                 665                 670
Glu Lys Lys Lys Ser Ser Ala Lys Lys Lys Lys Gly Ala Thr Lys Thr
        675                 680                 685
Lys Lys Gly Ser Gly Lys Asn
    690                 695
<210>21
<211>463
<212>PRT
<213>Chlamydia trachomatis
<400>21
Glu Glu Glu Leu Ser Ile Phe Leu Ser Trp Lys Ser Val Thr Glu Val
  1               5                  10                  15
Phe Glu Val Leu Ser Thr Asn Gly Asp Thr His Leu Gly Gly Asp Asp
             20                  25                  30
Phe Asp Gly Val Ile Xaa Asn Trp Met Leu Asp Glu Phe Lys Lys Gln
         35                  40                  45
Glu Gly Ile Asp Leu Ser Lys Asp Asn Met Ala Leu Gln Arg Leu Lys
     50                  55                  60
Asp Ala Ala Glu Lys Ala Lys Ile Glu Leu Ser Gly Val Ser Ser Thr
 65                  70                  75                  80
Glu Ile Asn Gln Pro Phe Ile Thr Ile Asp Ala Asn Gly Pro Lys His
                 85                  90                  95
Leu Ala Leu Thr Leu Thr Arg Ala Gln Phe Glu His Leu Ala Ser Ser
            100                 105                 110
Leu Ile Glu Arg Thr Lys Gln Pro Cys Ala Gln Ala Leu Lys Asp Ala
        115                 120                 125
Lys Leu Ser Ala Ser Asp Ile Asp Asp Val Leu Leu Val Gly Gly Met
    130                 135                 140
Ser Arg Met Pro Ala Val Gln Ala Val Val Lys Glu Ile Phe Gly Lys
145                 150                 155                 160
Glu Pro Asn Lys Gly Val Asn Pro Asp Glu Val Val Ala Ile Gly Ala
                165                 170                 175
Ala Ile Gln Gly Gly Val Leu Gly Gly Glu Val Lys Asp Val Leu Leu
            180                 185                 190
Leu Asp Val Ile Pro Leu Ser Leu Gly Ile Glu Thr Leu Gly Gly Val
        195                 200                 205
Met Thr Pro Leu Val Glu Arg Asn Thr Thr Ile Pro Thr Gln Lys Lys
    210                 215                 220
Gln Ile Phe Ser Thr Ala Ala Asp Asn Gln Pro Ala Val Thr Ile Val
225                 230                 235                 240
Val Leu Gln Gly Glu Arg Pro Met Ala Lys Asp Asn Lys Glu Ile Gly
                245                 250                 255
Arg Phe Asp Leu Thr Asp Ile Pro Pro Xaa Xaa Arg Gly His Pro Gln
            260                 265                 270
Ile Glu Val Thr Phe Asp Ile Asp Ala Asn Gly Ile Leu His Val Ser
        275                 280                 285
Ala Lys Asp Ala Ala Ser Gly Arg Glu Gln Lys Ile Arg Ile Glu Ala
    290                 295                 300
Ser Ser Gly Leu Lys Glu Asp Glu Ile Gln Gln Met Ile Arg Asp Ala
```

```
305                 310                 315                 320
Glu Leu His Lys Glu Glu Asp Lys Gln Arg Lys Glu Ala Ser Asp Val
                325                 330                 335
Lys Asn Glu Ala Asp Gly Met Ile Phe Arg Ala Glu Lys Ala Val Lys
            340                 345                 350
Asp Tyr His Asp Lys Ile Pro Ala Glu Leu Val Lys Glu Ile Glu Glu
        355                 360                 365
His Ile Glu Lys Val Arg Gln Ala Ile Lys Glu Asp Ala Ser Thr Thr
    370                 375                 380
Ala Ile Lys Ala Ala Ser Asp Glu Leu Ser Thr Arg Met Gln Lys Ile
385                 390                 395                 400
Gly Glu Ala Met Gln Ala Gln Ser Ala Ser Ala Ala Ala Ser Ser Ala
                405                 410                 415
Ala Asn Ala Gln Gly Gly Pro Asn Ile Asn Ser Glu Asp Leu Lys Lys
            420                 425                 430
His Ser Phe Ser Thr Arg Pro Pro Ala Gly Gly Ser Ala Ser Ser Thr
        435                 440                 445
Asp Asn Ile Glu Asp Ala Asp Val Glu Ile Val Asp Lys Pro Glu
    450                 455                 460
<210>22
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<212>PRT
<213>Chlamydia trachomatis
<400>22
Pro Ile Leu Lys Lys His Trp Leu Leu Leu Ser Asp Ser Ser Val Glu
  1                 5                  10                  15
Asn Ser Leu Lys Ser Asn Leu Lys Leu Lys Gln Ser Pro Thr Lys Leu
             20                  25                  30
Leu Leu Thr Arg Lys Val Asp Ala Val Phe Asp Val Glu Gln Lys Leu
         35                  40                  45
Tyr Thr Pro Glu Glu Ile Gly Ala Gln Ile Leu Met Lys Met Lys Glu
     50                  55                  60
Thr Ala Glu Ala Tyr Leu Gly Glu Thr Val Thr Glu Ala Val Ile Thr
 65                  70                  75                  80
Val Pro Ala Tyr Phe Asn Asp Ser Gln Arg Ala Ser Thr Lys Asp Ala
                 85                  90                  95
Gly Arg Ile Ala Gly Leu Asp Val Lys Arg Ile Ile Pro Asp Pro Thr
            100                 105                 110
Ala Ala Ala Leu Ala Tyr Gly Ile Asp Lys Glu Gly Asp Xaa Lys Ile
        115                 120                 125
Ala Val Phe Asp Leu Gly Gly Gly Thr Phe Asp Ile Ser Ile Leu Glu
    130                 135                 140
Ile Gly Asp Gly Ser Phe
145                 150
<210>23
<211>109
<212>PRT
<213>Chlamydia trachomatis
<400>23
Val Phe Asn Met Ser Glu Lys Arg Lys Ser Asn Lys Ile Ile Gly Ile
  1                 5                  10                  15
Asp Leu Gly Thr Thr Asn Ser Cys Val Ser Val Met Glu Gly Gly Gln
             20                  25                  30
Pro Lys Val Ile Ala Ser Ser Glu Gly Thr Arg Thr Thr Pro Ser Ile
         35                  40                  45
Val Ala Phe Lys Gly Gly Glu Thr Leu Val Gly Ile Pro Ala Lys Arg
     50                  55                  60
Gln Ala Val Thr Asn Pro Glu Lys Thr Leu Ala Ser Thr Lys Arg Phe
 65                  70                  75                  80
Ile Gly Arg Lys Phe Ser Glu Val Glu Ser Glu Ile Lys Thr Val Pro
                 85                  90                  95
```

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Tyr Lys Val Ala Pro Asn Ser Lys Gly Arg Cys Gly Leu
            100                 105
<210>24
<211>120
<212>PRT
<213>Chlamydia trachomatis
<400>24
Lys Met Leu Phe Met Asp Phe Leu Pro Pro Ile Glu Ser Met Glu Lys
  1               5                  10                  15
Ala Leu Gly Phe Ala Ser Gln Thr Ser Glu Glu Val Lys Asn Trp Ala
             20                  25                  30
Ile Gly Phe Gln Met Ile Leu Gln Gln Phe Lys Gln Ile Phe Glu Glu
         35                  40                  45
Lys Gly Val Val Glu Tyr Ser Ser Lys Gly Glu Leu Phe Asn Pro Tyr
     50                  55                  60
Leu His Glu Ala Val Glu Ile Glu Glu Thr Thr Thr Ile Pro Glu Gly
 65                  70                  75                  80
Thr Ile Leu Glu Glu Phe Thr Lys Gly Tyr Lys Ile Gly Asp Arg Pro
                 85                  90                  95
Ile Arg Val Ala Lys Val Lys Val Ala Lys Leu Pro Ala Lys Gly Asn
            100                 105                 110
Ser Asp Ser Asn Glu Glu Lys Glu
        115                 120
<210>25
<211>95
<212>PRT
<213>Chlamydia trachomatis
<400>25
Met Thr Glu Thr Pro Asn Thr Ser Ser Glu Glu Ile Gln Thr Ser Glu
  1               5                  10                  15
Pro Ser Pro Asp Asn Glu Leu Gln Val Leu Gln Gln Glu Asn Ala Asn
             20                  25                  30
Leu Lys Ala Glu Leu Gln Glu Gln Asn Asp Arg Tyr Leu Met Ala Leu
         35                  40                  45
Ala Glu Ala Glu Asn Ser Arg Lys Arg Leu Gln Lys Glu Arg Thr Glu
     50                  55                  60
Met Met Gln Tyr Ala Val Glu Asn Ala Leu Tyr Gly Phe Pro Ser Ser
 65                  70                  75                  80
Tyr Arg Lys Tyr Gly Glu Gly Phe Gly Ile Arg Phe Ser Asn Leu
                 85                  90                  95
<210>26
<211>392
<212>PRT
<213>Chlamydia trachomatis
<400>26
Met Glu Asn Arg Ile Glu Met Ser Gln Leu Arg Ala Ser Lys Lys Asp
  1               5                  10                  15
Ser Lys Ile Ser Tyr Val Leu Leu Met Ala Thr Lys Leu Tyr Leu Glu
             20                  25                  30
Ser Gly Gln Pro Val Gly Ser Lys Leu Leu Glu Glu Thr Tyr Cys Ser
         35                  40                  45
Asp Leu Ser Ser Ala Thr Ile Arg Asn Tyr Phe Ala Gln Leu Glu Thr
     50                  55                  60
Asn Gly Phe Leu Arg Lys Asn His Ile Ser Gly Gly Arg Ile Pro Thr
 65                  70                  75                  80
Asp Leu Ala Phe Arg Tyr Tyr Ala Asp His Asn Ala Pro Phe Leu Glu
                 85                  90                  95
Gln Glu Glu Ile Leu Ala Ile Gln Gln Lys Leu Thr Glu Leu Pro Glu
            100                 105                 110
Tyr Ser Lys Asn Ile Val Lys Asp Leu Gln Lys Ala Ser Glu Val Leu
        115                 120                 125
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Ser Asp Ile Leu Gln Leu Pro Val Cys Phe Ser Ser Pro Arg Phe Glu
    130                 135                 140
Ser Asp Ser Val Ile Asn Ile Gln Leu Val Ala Ile Asp Asp Gln Arg
145                 150                 155                 160
Val Val Phe Val Leu Ser Thr Glu Phe Gly Gln Val Phe Thr Asp Val
                165                 170                 175
Leu Trp Leu Pro Glu Gln Leu Pro Glu Asn Ser Leu Lys Arg Ile Glu
            180                 185                 190
Gly Phe Leu Gln Asn Tyr Leu Arg Lys Gln Pro Ser Asp Ser Leu Leu
        195                 200                 205
Ser Gln Lys Glu Glu Asp Leu Gly Met Val Leu Tyr Asn Glu Val Val
    210                 215                 220
Val Arg Tyr Leu Thr Arg Tyr Cys His Phe Ser Glu Glu Asp Leu Tyr
225                 230                 235                 240
Gln Thr Gly Leu Ser Arg Leu Leu Lys Tyr Glu Thr Phe Lys Asp Pro
                245                 250                 255
Glu Thr Leu Ala Gln Gly Leu Ala Phe Phe Glu Asn Arg Lys His Met
            260                 265                 270
Cys Gln Leu Leu Asn Thr Tyr Leu His Lys Glu Thr Pro Thr Ala Phe
        275                 280                 285
Ile Gly Arg Glu Leu Thr Asp Ile Val Gly Asn Thr Asp Pro Ser Cys
    290                 295                 300
Ala Val Ile Thr Ile Pro Tyr Tyr Met Asp Arg Thr Pro Leu Gly Ala
305                 310                 315                 320
Phe Gly Val Leu Gly Pro Met Asn Leu Pro Tyr Gln Gln Val Phe Gly
                325                 330                 335
Thr Leu Ser Leu Phe Thr Glu Arg Leu Lys Val Ile Leu Thr Gln Ser
            340                 345                 350
Phe Tyr Lys Phe Lys Leu Ser Phe Arg Arg Pro Cys Pro Thr Asp Pro
        355                 360                 365
Arg Cys Ser Gln Arg Pro Ala Glu Leu Thr Arg Ser Ser Ser Ile Lys
    370                 375                 380
Leu Leu Pro Ala Lys Glu Leu Ser
385                 390
<210>27
<211>581
<212>PRT
<213>Chlamydia trachomatis
<400>27
Met Arg Thr Ser Leu Leu Phe Tyr Arg Thr Ser Lys Asn Ala Asn Lys
  1                 5                  10                  15
Glu Ala Ser Val Leu Ser Tyr Glu Leu Leu Gln Lys Ala Gly Tyr Leu
             20                  25                  30
Phe Lys Thr Ser Lys Gly Ile Tyr Ser Tyr Thr Pro Leu Phe Gln Arg
         35                  40                  45
Val Ile Leu Lys Met Thr Glu Ile Ile Arg Glu Glu Leu Asn Ala Ile
     50                  55                  60
Gly Gly Gln Glu Val Cys Leu Pro Leu Leu Gln Pro Ala Glu Leu Trp
 65                  70                  75                  80
Glu Lys Thr Gly Arg Trp Lys Ala Phe Leu Ser Glu Lys Leu Leu Tyr
                85                  90                  95
Val Leu Lys Asp Arg Glu Asn Lys Ala Met Cys Leu Ala Pro Thr His
            100                 105                 110
Glu Glu Val Val Ser Glu Phe Val Ala Gln Trp Leu Thr Gly Arg Glu
        115                 120                 125
Gln Leu Pro Ile His Leu Tyr Gln Ile Gly Thr Lys Phe Arg Asp Glu
    130                 135                 140
Ile Arg Pro Arg Phe Gly Leu Met Arg Ala Lys Glu Phe Leu Met Glu
145                 150                 155                 160
Asp Ser Tyr Thr Phe Ser Asp Ser Pro Glu Gln Met Glu Glu Gln Tyr
                165                 170                 175
```

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Ala Lys Leu Arg Leu Ala Tyr Gln Arg Ile Phe Asp Arg Leu Asn Leu
            180                 185                 190
Lys Tyr Val Ile Val Ala Ala Asp Gly Gly Lys Ile Gly Lys Gly Lys
        195                 200                 205
Ser Glu Glu Phe His Val Leu Cys Ser Leu Gly Glu Asp Thr Ile Cys
    210                 215                 220
Val Ser Gly Ser Tyr Gly Ala Asn Val Glu Ala Ala Gln Ala Ile Pro
225                 230                 235                 240
Pro Ser Tyr Val Tyr Asp Ser Asn Leu Leu Pro Val Glu Glu Val Ala
                245                 250                 255
Thr Pro Asn Ile Arg Thr Ile Glu Asp Leu Glu Val Phe Phe Asn Thr
            260                 265                 270
Pro Lys His Lys Ile Leu Lys Thr Leu Val Val Lys Thr Arg Gln Lys
        275                 280                 285
Asp Ser Glu Lys Phe Phe Ala Ile Cys Ile Arg Gly Asp Arg Gln Ile
    290                 295                 300
Asn Leu Thr Lys Val Ala Ser Phe Leu Gln Val Asp Asp Cys Glu Leu
305                 310                 315                 320
Ala Ser Glu Glu Glu Ile Leu Lys His Leu His Val Glu Lys Gly Phe
                325                 330                 335
Ile Gly Pro Leu Tyr Cys Pro Ile Pro Cys Tyr Ala Asp Glu Thr Thr
            340                 345                 350
Arg Pro Met Thr Asn Phe Ile Cys Ala Asn Asn Gln Lys Asp Val His
        355                 360                 365
Cys Lys His Val Asn Trp Gly Arg Asp Ile Pro Leu Pro Ala Phe Gly
    370                 375                 380
Asp Phe Leu Leu Ala Glu Ala Gly Asp Leu Cys Pro Gln Asn Gly Gly
385                 390                 395                 400
Ala Pro Tyr Glu Ile Phe Gln Gly Val Glu Val Ala His Ile Phe Asn
                405                 410                 415
Leu Gly Thr Arg Tyr Thr Glu Ser Phe Ser Val Gly Phe Gln Asp Lys
            420                 425                 430
Asn Gly Asp Lys Gln Leu Cys Trp Met Gly Thr Tyr Gly Ile Gly Val
        435                 440                 445
Gly Arg Thr Leu Ala Ala Cys Ile Glu Gln Leu Ala Asp Asn Lys Gly
    450                 455                 460
Leu Val Trp Pro Leu Ala Val Ala Pro Phe Ser Ile Thr Ile Leu Tyr
465                 470                 475                 480
Asn Gly Gly Asp Thr Glu Gly Glu Ala Thr Ala Leu Gln Leu Tyr Gln
                485                 490                 495
Ser Leu Asn Thr Glu Gly Phe Glu Pro Leu Leu Asp Asp Arg Asn Glu
            500                 505                 510
Arg Leu Gly Phe Lys Leu Lys Asp Ser Asp Leu Leu Gly Ile Pro Tyr
        515                 520                 525
Lys Leu Ile Ile Gly Lys Ser Phe Gln Ser Thr Gly Leu Leu Glu Ile
    530                 535                 540
Glu Ser Arg Ser Gly Glu Lys Cys Asn Val Ser Pro Glu Asn Leu Leu
545                 550                 555                 560
Asp Trp Cys Ser Lys Asn Leu Pro Cys His Thr Arg Lys Ile Pro Pro
                565                 570                 575
Leu Arg Glu Gln Asn
            580
<210>28
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<213>Chlamydia trachomatis
<400>28
Gly Arg Arg Gly Asp Glu Ser Arg Arg Val Thr Pro Ser Gly Gln Thr
  1               5                  10                  15
Ile Ser Phe Pro Ala Val Gly Lys Ser Thr Ser Ala Glu Asp Ile Gln
             20                  25                  30
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60634-1626.ST25

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Gln Leu Ala Leu Pro Ile Ile Gln Ser Asp Ala Met Ala Ser Ser Pro
         35                  40                  45
Ser Val Gly Gly Ala Val Gly Glu Val Glu Val Ala Glu Ile Ile Ala
     50                  55                  60
Asp Val Met Glu Lys Asn Asp Ala Asn Val Gln Lys Leu Asp Glu Asp
 65                  70                  75                  80
Met Glu Ala Leu Leu Gln Ala Ile Ser Ser Ser Glu Glu Gln Leu Glu
                 85                  90                  95
Ser Pro Gly Val Arg Asn Lys Ser Ala Leu Lys Gly Thr Asn Arg Ser
            100                 105                 110
Asn Ser His Arg Glu Glu Ile Ala Arg Asn Gln Arg Leu Arg Ser Leu
        115                 120                 125
Ser Val Arg His Gly Leu Ala His Asn Arg His Ser Leu Arg Arg Leu
    130                 135                 140
Ala Arg Gly Ile Arg His His Ala Gly Leu Val Thr Ala Ser Phe Ala
145                 150                 155                 160
Thr Leu His Lys Thr Leu Arg Ala Val Pro Gln Glu Asp Leu Lys Ser
                165                 170                 175
Ile Leu Gly Lys Asp Ser Asp Thr Val Leu Ala Arg Leu His Lys Leu
            180                 185                 190
Gly Leu Glu Val Asn Glu Lys Gly Glu Trp Arg Leu Arg Ala Asn Gly
        195                 200                 205
Glu Val Gly Ser Ile Asn Gln Ser Ile Ser Asn Leu Ala Arg Ser Ala
    210                 215                 220
Glu Arg Leu His Asp Asp Gly Pro Leu Ser Ile Asn Asp Gln Ala Ser
225                 230                 235                 240
Glu Glu Glu Val Thr Ala Cys Cys Ser Val Gly Arg Arg Ala Cys Gln
                245                 250                 255
Phe Leu Gln Glu His Leu Met Gly Ala Leu Arg Ala Ile Tyr Tyr Gln
            260                 265                 270
Ile Leu Arg Phe Phe His Trp Ile Ser Arg Arg Val Glu Val Glu Ser
        275                 280                 285
Glu Asp Thr Asp Tyr Tyr Met Arg Pro Gly Thr Phe Ile Asn Pro Tyr
    290                 295                 300
Ala Ser Tyr Leu Ser Ser Ser Pro Ser Val Glu Asp Pro Arg Ser Leu
305                 310                 315                 320
Arg Asp Arg Leu Arg Asp Gly Gly Ala Leu Ser Gly Glu Asp Thr Leu
                325                 330                 335
Phe Ser Met Pro Gln Asp Glu Ser Leu Asp Ser Glu Ser Val Ser Asp
            340                 345                 350
Asp Asp Arg Gly Phe
        355
<210>29
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<213>Chlamydia trachomatis
<400>29
Gln Pro Ala Asn Val Tyr Lys Trp Leu Leu Leu Cys Asn His Lys Val
  1                 5                  10                  15
Cys Met Leu Leu Arg Lys Phe Cys Gly Tyr Leu Phe Cys Ser Ser Leu
             20                  25                  30
Val Cys Ser Phe Ile Ser Val Ile Val Val Ser Phe Arg Ser Glu Pro
         35                  40                  45
Ile Thr Pro Ser Ile Ala Ile Phe Ser Ser Phe Ser His Asn Ser Leu
     50                  55                  60
Ser Glu Cys Ile Glu Ser Cys Gln Lys Glu Leu Thr Ser Phe Gly Asn
 65                  70                  75                  80
Met Pro Thr Ile Ser Leu Phe Asn Ala Glu Asp Asn Val Val Lys Ala
                 85                  90                  95
Arg Lys Ile Ala Arg Thr Leu His Lys Asp Pro Asn Val Val Met Ile
            100                 105                 110
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```
Ile Thr Leu Gly Pro Ile Ala Thr Lys Val Met Ser Gln Ile Glu Thr
        115                 120                 125
Gln Lys Pro Ile Ile Tyr Ala Val Val Pro Ala Gly Glu Ala Leu Arg
    130                 135                 140
Phe Pro Lys Glu Gln Val Asn Ile Tyr Gly Val Asn Asp Ser Val Asp
145                 150                 155                 160
Thr Asn Gln Cys Cys Phe Ala Ile His Ala Val Thr Asn Asn Ala Asn
                165                 170                 175
Ser Leu Val Tyr Leu Gln Pro His Glu Pro Phe Pro Ser Ser Leu Gln
            180                 185                 190
Glu Glu Ile Thr Asn Lys Leu Arg Ala Ser Gly Ile Lys Val Thr Glu
        195                 200                 205
Leu Pro Ile Ser Ala Ala Asn Met Ser Ser Arg Ile Gln Phe Ile Ala
    210                 215                 220
Glu Asn Arg Pro Ser Ala Val Phe Phe Pro Leu Ser Ser Leu Ser Glu
225                 230                 235                 240
Lys Met Gly Thr Thr Leu Ile Lys Ser Ile Leu Lys Glu Asn Ile Pro
                245                 250                 255
Leu Ile Thr Asp Asp Ser Ser Leu Val Met Glu Gly Ala Cys Ala Ala
            260                 265                 270
Cys Ser Val Asp Tyr Lys Leu Ser Gly Lys Gln Ile Ala Cys Ile Val
        275                 280                 285
Arg Tyr Leu Leu Ser Lys Lys Asn Asn Glu Glu His Leu Asn Gln Ile
    290                 295                 300
Ser Ala Glu Pro Ile Leu Ser Lys Ile Thr Phe Asn Glu Glu Ile Ile
305                 310                 315                 320
Arg Phe Leu Gly Leu Pro Phe Asn Met Ala Pro Ala His Gln Phe Ile
                325                 330                 335
Ser Phe His Ser Ala Asp Asn Thr Gly Leu Val Thr Leu Gln Ile Pro
            340                 345                 350
<210>30
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<212>PRT
<213>Chlamydia trachomatis
<400>30
Leu Thr Leu Pro Cys Phe Met Asp Phe Arg Trp Phe Met Lys Arg Asn
  1                 5                  10                  15
Pro His Phe Val Ser Leu Thr Lys Asn Tyr Leu Phe Ala Asp Leu Gln
             20                  25                  30
Lys Arg Val Ala Gln Phe Arg Leu Glu Asn Pro Gln His Thr Val Ile
         35                  40                  45
Asn Leu Ser Ile Gly Asp Thr Thr Gln Pro Leu Asn Ala Ser Val Ala
     50                  55                  60
Glu Ala Phe Ala Ser Ser Ile Ala Arg Leu Ser Ser Pro Thr Thr Cys
 65                  70                  75                  80
Arg Gly Tyr Gly Pro Asp Phe Gly Leu Pro Ala Leu Arg Gln Lys Leu
                 85                  90                  95
Ser Glu Asp Phe Tyr Arg Gly Cys Val Asp Ala Lys Glu Ile Phe Ile
            100                 105                 110
Ser Asp Gly Ala Lys Ala Asp Leu Phe Arg Leu Leu Ser Phe Phe Gly
        115                 120                 125
Pro Asn Gln Thr Val Ala Ile Gln Asp Pro Ser Tyr Pro Ala Tyr Leu
    130                 135                 140
Asp Ile Ala Arg Leu Thr Gly Ala Lys Glu Ile Ile Ala Leu Pro Cys
145                 150                 155                 160
Leu Gln Glu Asn Ala Phe Phe Pro Glu Phe Pro Glu Asp Thr His Ile
                165                 170                 175
Asp Ile Leu Cys Leu Cys Ser Pro Asn Asn Pro Thr Gly Thr Val Leu
            180                 185                 190
Asn Lys Asp Gln Leu Arg Ala Ile Val His Tyr Ala Ile Glu His Glu
        195                 200                 205
```

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```
Ile Leu Ile Leu Phe Asp Ala Ala Tyr Ser Thr Phe Ile Ser Asp Pro
    210                 215                 220
Ser Leu Pro Lys Ser Ile Phe Glu Ile Pro Asp Ala Arg Phe Cys Ala
225                 230                 235                 240
Ile Glu Ile Asn Ser Phe Ser Lys Pro Leu Gly Phe Ala Gly Ile Arg
                245                 250                 255
Leu Gly Trp Thr Val Ile Pro Gln Glu Leu Thr Tyr Ala Asp Gly His
            260                 265                 270
Phe Val Ile Gln Asp Trp Glu Arg Phe Leu Ser Thr Thr Phe Asn Gly
        275                 280                 285
Ala Ser Ile Pro Ala Gln Glu Ala Gly Val Ala Gly Leu Ser Ile Leu
    290                 295                 300
Pro Gln Leu Glu Ala Ile His Tyr Tyr Arg Glu Asn Ser Asp Leu Leu
305                 310                 315                 320
Arg Lys Ala Leu Leu Ala Thr Gly Phe Glu Val Phe Gly Gly Glu His
                325                 330                 335
Ala Pro Tyr Leu Trp Val Lys Pro Thr Gln Ala Asn Ile Ser Asp Arg
            340                 345                 350
Asp Leu Phe Asp Phe Phe Leu Arg Glu Tyr His Ile Ala Ile Thr Pro
        355                 360                 365
Gly Ile Gly Phe Gly Arg Ser Gly Ser Gly Phe Val Arg Phe Ser Ser
    370                 375                 380
Leu Gly Lys Arg Glu Asp Ile Leu Ala Ala Cys Glu Arg Leu Gln Met
385                 390                 395                 400
Ala Pro Ala Leu Gln Ser
                405

<210>31
<211>230
<212>PRT
<213>Chlamydia trachomatis
<400>31
Arg Arg Ser Arg Arg Lys Thr Cys Trp Leu Cys Tyr Phe Gly Gly Asp
  1               5                  10                  15
Phe Ile Phe Leu Arg Leu Phe Asp Val Ser Arg Phe His Gly Asp Met
             20                  25                  30
Asp Ile Gly Leu Gln Gly Ala Val Phe Ser Val Phe Asp Leu Asp His
         35                  40                  45
Pro Glu Ala Cys Met Val Asn Ser Asp Phe Phe Val Ala Ala Leu Cys
     50                  55                  60
Asn Phe Ala Val Asn Lys Trp Ser Tyr Arg Phe Arg Leu Trp His Leu
 65                  70                  75                  80
Ser Ser His Leu Gly Asp Glu Phe Ile Leu Ala Asn Gln Leu Pro Pro
                 85                  90                  95
Lys Lys Arg Tyr Asn Arg Ser Asp Glu Ala Val Asp Phe Phe Ala Ser
            100                 105                 110
Phe Arg Tyr Thr Pro Gln Ile Arg Val Tyr Gly Gly Ile Gly Tyr Ile
        115                 120                 125
Ile Ser Arg Asp Ser Thr Phe Pro Glu Asp Pro Leu Tyr Phe Glu Gly
    130                 135                 140
Gly Ile Glu Leu Arg Pro Phe Gly Leu Arg Glu Asp Asn Leu His Ala
145                 150                 155                 160
Gln Pro Val Phe Ala Met His Phe Arg Phe Trp Glu Glu His Asp Phe
                165                 170                 175
Ser Ile Asp Gln Thr Tyr Ile Val Gly Met Glu Trp Ser Lys Phe Gln
            180                 185                 190
Asp Val Gly Arg Lys Val Arg Ala Val Leu Glu Tyr His Gln Gly Phe
        195                 200                 205
Ser His Glu Gly Gln Phe Val Arg Glu Glu Cys Asp Tyr Tyr Gly Phe
    210                 215                 220
Arg Leu Ser Tyr Gly Phe
225                 230
```

Sequence Listing

<210>32
<211>254
<212>PRT
<213>Chlamydia trachomatis
<400>32

```
Arg Gly Cys Leu Ile Thr His Thr Asn Met Met Lys Pro Leu Arg Phe
  1               5                  10                  15
Gly Tyr Phe Phe Cys Ala Ile Tyr Phe Thr Leu Leu Gln Ala Ala Phe
            20                  25                  30
Ala Lys Glu Pro Asn Ser Cys Pro Asp Cys Gln Asn Asn Trp Lys Glu
        35                  40                  45
Val Thr Tyr Thr Asp Gln Leu Pro Glu Asn Ile Ile His Ala Asp Asp
    50                  55                  60
Ala Cys Tyr His Ser Gly Tyr Val Gln Ala Leu Ile Asp Met His Phe
65                  70                  75                  80
Leu Asp Ser Cys Cys Gln Val Ile Val Glu Asn Gln Thr Ala Tyr Leu
                85                  90                  95
Phe Ser Leu Pro Thr Asp Asp Val Thr Arg Asn Ala Ile Ile Asn Leu
            100                 105                 110
Ile Lys Asp Leu Pro Phe Ile His Ser Val Glu Ile Cys Gln Ala Ser
        115                 120                 125
Tyr Gln Thr Cys His His Gln Gly Pro His Gly Lys Thr Ser Leu Pro
    130                 135                 140
Glu Gln Arg Ser Phe Cys Thr Lys Val Cys Gly Lys Glu Ala Ile Trp
145                 150                 155                 160
Leu Pro Gln Asn Thr Ile Leu Phe Ser Pro Leu Val Ala Asp Pro Arg
                165                 170                 175
Gln Ala Thr Asn Ser Ala Gly Ile Arg Phe Asn Asp Glu Val Val Gly
            180                 185                 190
Lys Arg Val Gly Ser Ala Thr Ser Val Glu Ile Leu Ser Ser Tyr Asp
        195                 200                 205
Tyr Leu Met Ser Pro Asp Ser Met Glu Thr Trp Ile Leu Val Ser Lys
    210                 215                 220
Glu Leu Tyr Ser Leu Phe Ser Thr Trp Ile Ile Gln Lys Leu Ala Trp
225                 230                 235                 240
Ser Thr Leu Thr Phe Leu Ser Pro Leu Cys Ala Thr Leu Gln
                245                 250
```

<210>33
<211>115
<212>PRT
<213>Chlamydia trachomatis
<400>33

```
Val Arg Phe Leu Leu Lys Leu Leu Ser Lys Glu Lys Glu Asn Ile Leu
  1               5                  10                  15
Leu Glu Gly Phe Trp Val Leu Glu Val Arg Val Thr Thr Lys Ala Arg
            20                  25                  30
Glu Asn Arg Val Val Cys Leu Glu Asp Gly Ile Leu Arg Val Arg Val
        35                  40                  45
Thr Glu Val Pro Glu Lys Gly Lys Ala Asn Asp Ala Val Val Ala Leu
    50                  55                  60
Leu Ala Asn Phe Leu Ser Ile Pro Lys Ser Asp Val Thr Leu Ile Ala
65                  70                  75                  80
Gly Glu Ala Ser Arg Arg Lys Lys Val Leu Leu Pro Arg Ser Ile Lys
                85                  90                  95
Ala Phe Leu Leu Glu Gln Phe Pro Ser Glu Ser Ser Ser Thr Thr Gly
            100                 105                 110
Lys Lys Ser
        115
```

<210>34
<211>519
<212>PRT

<213>Chlamydia trachomatis
<400>34

```
Phe Gly Tyr Leu Leu Asp Ser Phe Leu Leu Phe Lys Asn His Leu Val
  1               5                  10                  15
Ile Pro Asn Ser Ala Phe Arg His Phe Leu Ala Leu Tyr Gln Gln Ile
             20                  25                  30
Val Glu Gly Gln His Val Pro Cys Gly Asn His Ile Leu Leu Ile Lys
         35                  40                  45
Thr Glu Pro Leu His Ile Arg Thr Val Phe Ala Arg Val Val Asn Gln
     50                  55                  60
Leu Leu Pro Gln Gly Leu Ser His Thr Ser Ala Asn Ile Leu Glu Pro
 65                  70                  75                  80
Thr Thr Arg Glu Ser Gly Asp Ile Phe Glu Phe Phe Gly Asn Pro Ser
                 85                  90                  95
Ala Gln Ile Glu Arg Ile Pro Leu Glu Phe Phe Thr Ile Glu Pro Tyr
            100                 105                 110
Lys Glu His Ser Tyr Phe Cys Asn Arg Asp Leu Leu Gln Thr Thr Leu
        115                 120                 125
Gln Ser Glu Ser Glu Ile Lys Lys Ile Phe Glu Thr Ala Pro Lys Glu
    130                 135                 140
Pro Val Lys Ala Ala Thr Tyr Leu Ser Lys Gly Ser Glu Ile Ser Ser
145                 150                 155                 160
Leu His Thr Asp Ser Trp Leu Thr Gly Ser Ala Ala Ala Tyr Gln Tyr
                165                 170                 175
Ser Glu Gln Ala Asp Lys Asn Glu Tyr Thr His Ala Gln Pro Cys Tyr
            180                 185                 190
Pro Phe Leu Glu Ala Met Glu Met Gly Leu Ile Asn Ser Glu Gly Ala
        195                 200                 205
Leu Leu Thr Arg Tyr Phe Pro Ser Ala Ser Leu Lys Gly Met Leu Ile
    210                 215                 220
Ser Tyr His Val Arg His Tyr Leu Lys Gln Ile Tyr Phe Gln Val Pro
225                 230                 235                 240
Ser Tyr Thr His Gly Asn Tyr Phe Ser His Asn Asp Arg Gly Leu Leu
                245                 250                 255
Leu Asp Leu Gln Gln Ala Asp Ile Asp Val Phe Trp Ala Asp Glu Glu
            260                 265                 270
Ser Gly Arg Val Leu Gln Tyr Thr Lys Arg Arg Asp Lys Asn Ser Gly
        275                 280                 285
Met Phe Val Ile Lys Asn Arg Val Glu Glu Phe Arg Ser Ala Tyr Phe
    290                 295                 300
Ile Ala Ile Tyr Gly Ser Arg Leu Leu Glu Asn Asn Phe Ser Ala Gln
305                 310                 315                 320
Leu His Thr Leu Leu Ala Gly Leu Gln Gln Ala Ala His Thr Leu Gly
                325                 330                 335
Ile Pro Gly Phe Ser Lys Pro Thr Pro Leu Ala Val Ile Thr Gly Gly
            340                 345                 350
Gly Thr Gly Val Met Ala Thr Gly Asn Arg Val Ala Lys Glu Leu Gly
        355                 360                 365
Ile Leu Ser Cys Gly Thr Val Leu Asp Leu Glu Ala Ser Pro Ala Gln
    370                 375                 380
Ile Asp Gln Pro Thr Asn Glu Phe Leu Asp Ala Lys Met Thr Tyr Arg
385                 390                 395                 400
Leu Pro Gln Leu Ile Glu Arg Gln Glu His Phe Tyr Ala Asp Leu Pro
                405                 410                 415
Ile Leu Val Val Gly Gly Val Gly Thr Asp Phe Glu Leu Tyr Leu Glu
            420                 425                 430
Leu Val Tyr Leu Lys Thr Gly Ala Lys Pro Pro Thr Pro Ile Phe Leu
        435                 440                 445
Ile Gly Pro Ile Glu Tyr Trp Lys Glu Lys Val Ala His Ala Tyr Glu
    450                 455                 460
Ile Asn Leu Lys Ala Gly Thr Ile Arg Gly Ser Glu Trp Ile Ser Asn
```

09250768.1 = 1350

```
465                 470                 475                 480
Cys Leu Tyr Cys Ile Thr Ser Pro Glu Ala Gly Ile Ala Val Phe Glu
                485                 490                 495
Gln Phe Leu Ala Gly Glu Leu Pro Ile Gly Tyr Asp Tyr Pro Pro Ala
            500                 505                 510
Pro Asp Gly Leu Val Ile Val
        515
<210>35
<211>196
<212>PRT
<213>Chlamydia trachomatis
<400>35
Ala Gly Ser Ser His Thr Arg Ile Pro Met Thr Leu Phe His Ser His
  1               5                  10                  15
His Asp Ala Val Ser Pro Asp Gly Tyr Leu Cys Ser Ser Leu Gln Leu
            20                  25                  30
Val Gly Thr Gly Val Tyr Glu Gly Glu Ile Glu Ile Gln Asn Ile Pro
        35                  40                  45
Ser Tyr Phe Leu Gly Phe Gln Leu Pro Ser His Cys Ile His Leu Asn
    50                  55                  60
Leu Lys Ser Ser Leu Ala Gln Leu Gly Ile Asp Ala Ser Leu Leu His
65                  70                  75                  80
Cys Glu Leu Ser Lys Asn Gln His Arg Ala His Ile His Ala Gln Phe
                85                  90                  95
Thr Gly His Gly Pro Ile Ala Glu Ser Met Leu Ala Leu Leu Gln Pro
            100                 105                 110
Gly Asp Arg Val Ala Lys Leu Phe Ala Ala Asp Asp Arg Arg Leu Val
        115                 120                 125
Arg Ser Pro Asp Tyr Leu Glu Ser Met Leu Lys Asn Thr Asp Lys Ala
    130                 135                 140
Gly His Pro Leu Leu Cys Phe Gly Lys Lys Leu Glu His Leu Ile Ser
145                 150                 155                 160
Phe Asp Val Val Asp Asp Arg Leu Val Val Ser Leu Pro Ser Leu Pro
                165                 170                 175
Gly Val Val Arg Tyr Asp Ser Asp Ile Tyr Trp Thr Pro Ser Ser Tyr
            180                 185                 190
Ser Lys Ile Thr
        195
<210>36
<211>304
<212>PRT
<213>Chlamydia trachomatis
<400>36
Leu Phe Val Val Leu Leu Ser Arg Gly Ser Arg Arg Ile Met Arg Met
  1               5                  10                  15
Gln Ile Pro Arg Ser Val Gly Thr His Asp Gly Ser Phe His Ala Asp
            20                  25                  30
Glu Val Thr Ala Cys Ala Leu Leu Ile Met Phe Asp Leu Val Asp Glu
        35                  40                  45
Asn Lys Ile Val Arg Thr Arg Asp Pro Gln Lys Leu Ala Gln Cys Glu
    50                  55                  60
Tyr Val Cys Asp Val Gly Gly Arg Tyr Ser Thr Glu His Lys Arg Phe
65                  70                  75                  80
Asp His His Gln Val Ser Tyr Thr Gly Ser Trp Ser Ser Ala Gly Met
                85                  90                  95
Val Leu Asp Tyr Leu His Gly Leu Gly Phe Leu Ser His Asp Glu Tyr
            100                 105                 110
Glu Tyr Leu Asn Asn Thr Leu Val His Gly Val Asp Glu Gln Asp Asn
        115                 120                 125
Gly Arg Phe Phe Ser Lys Glu Gly Phe Cys Ser Phe Ser Asp Ile Ile
    130                 135                 140
```

Lys Ile Tyr Asn Pro Leu Glu Glu Gly Gly Asn Thr Asp Lys Lys Ile
145 150 155 160
Phe Phe Ala Leu Arg Phe Ala Ile Asp Leu Leu Thr Arg Leu Arg Glu
165 170 175
Lys Phe Cys Tyr Asp Arg Val Cys Arg Asp Ile Val Lys Gln Val Met
180 185 190
Glu Lys Glu Ser Val Cys Leu Arg Phe Asp Arg Pro Leu Ala Trp Gln
195 200 205
Glu Asn Phe Phe Ser Leu Gly Gly Glu Ser His Pro Ala Ala Phe Val
210 215 220
Ser Phe Pro Cys Ser Asp Gln Trp Ile Leu Arg Gly Ile Pro Pro Thr
225 230 235 240
Leu Asp Arg Arg Met Glu Val Arg Ile Pro Phe Pro Glu Glu Trp Ala
245 250 255
Gly Leu Leu Gly Asp Gln Leu Val Gln Ala Thr Gly Ile Pro Gly Ala
260 265 270
Ile Phe Cys His Lys Gly Leu Phe Leu Ser Val Trp Asp Ser Gln Glu
275 280 285
Ser Cys Glu Glu Ala Leu Asn Leu Val Leu Lys Gln Gln Arg Leu Val
290 295 300

<210>37
<211>124
<212>PRT
<213>Chlamydia trachomatis
<400>37
Arg Ser Thr Glu Phe Ser Val Lys Thr Ala Glu Ile Ser Met Thr Thr
1 5 10 15
Ile Phe Glu Arg Ile Ile Glu Gly Ala Val Glu Cys Asp Lys Val Phe
20 25 30
Glu Asp Glu Asn Phe Ile Val Ile Lys Asp Lys Phe Pro Gln Ala Pro
35 40 45
Val His Leu Leu Ile Ile Pro Lys Lys His Ile Glu Lys Leu Gln Asp
50 55 60
Ile Gln Gly Asp Asp Phe Leu Leu Leu Ala Glu Ala Gly Lys Ile Ile
65 70 75 80
Gln Leu Met Ala Arg Asn Phe Gly Ile Glu Asn Gly Tyr Arg Val Val
85 90 95
Val Asn Asn Gly Leu Glu Gly Gly Gln Ser Val Phe His Leu His Ile
100 105 110
His Leu Leu Gly Gly Gly Leu Leu Gly Ser Ile Ala
115 120

<210>38
<211>251
<212>PRT
<213>Chlamydia trachomatis
<400>38
Glu Val Thr Gly Tyr Thr Arg Arg Arg Phe Ser Leu Ala Cys Arg Ser
1 5 10 15
Trp Glu Asp Tyr Ser Val Asp Gly Ser Lys Phe Arg Asp Arg Lys Trp
20 25 30
Val Ser Arg Cys Cys Gln Gln Trp Leu Arg Arg Gly Ala Glu Arg Ile
35 40 45
Pro Pro Thr His Ser Ser Ser Trp Trp Arg Leu Ile Arg Leu His Ser
50 55 60
Ile Val Tyr Leu Leu Val Met Cys Cys Val Asp Gly Ser Asn Ser Ile
65 70 75 80
Gln Gln Arg Met Arg Phe Cys Glu Tyr Arg Thr Ala Ala Gln Glu Ala
85 90 95
Lys Thr Ser Leu Ser Ser Asp Cys Ser Leu Leu Glu Ala Arg Leu Ala
100 105 110
Leu Arg Ala Leu Ala Lys His His Glu Tyr Ser Ala Trp Arg Glu Ala

```
        115                 120                 125
Phe Leu Arg Ser Gln Glu Arg Phe Pro Ser Leu Glu Ala Asp Arg Asp
    130                 135                 140
Ile His Glu Asp Leu Ala Ala Ser Leu Leu Gln Lys Asn Ile Arg His
145                 150                 155                 160
Ser Ser Leu Thr Val Arg Val Ile Thr Ile Leu Ala Val Gly Met Ala
                165                 170                 175
Arg Asp Tyr Arg Leu Val Pro Ile Val Leu Gln Ala Leu Ser Asp Asp
            180                 185                 190
Ser Asp Thr Val Arg Glu Ile Ala Val Gln Val Ala Val Met Tyr Gly
        195                 200                 205
Ser Ser Cys Leu Leu Arg Ala Val Gly Asp Leu Ala Lys Asn Asp Phe
    210                 215                 220
Phe Tyr Ser Ser Thr His His Cys Leu Ser Cys Cys Ser Arg Val Gly
225                 230                 235                 240
Asp Thr Arg Ser Cys Ala Leu Ile Tyr Glu Leu
                245                 250
```

<210>39
<211>358
<212>PRT
<213>Chlamydia trachomatis
<400>39

```
Ser Lys Ile His Lys Leu Asp Gly Thr Glu Arg Arg Glu Ala Trp Arg
  1               5                  10                  15
Ser Leu Cys Val Leu Thr Arg Pro His Ser Gly Val Leu Thr Gly Ile
            20                  25                  30
Asp Gln Ala Leu Met Thr Cys Glu Met Leu Lys Glu Tyr Pro Glu Lys
        35                  40                  45
Cys Thr Glu Glu Gln Ile Arg Thr Leu Leu Ala Ala Asp His Pro Glu
    50                  55                  60
Val Gln Val Ala Thr Leu Gln Ile Ile Leu Arg Gly Gly Arg Val Phe
65                  70                  75                  80
Arg Ser Ser Ser Ile Met Glu Ser Val Gln Lys Leu Ala Cys Asn Ser
                85                  90                  95
Leu Ser Ala Arg Val Gln Met Gln Ala Ala Ala Ile Leu Tyr Leu Glu
            100                 105                 110
Gly Asp Pro Phe Gly Glu Asp Lys Leu Thr Glu Gly Leu Ser Ala Thr
        115                 120                 125
Ser Ser Ile Leu Cys Glu Ala Ala Ser Glu Ala Val Cys Ser Leu Gly
    130                 135                 140
Ile His Gly Val His Leu Ala Gly Arg Phe Leu Ser Lys Val Gln Gly
145                 150                 155                 160
Met Arg Ser Arg Val Asn Leu Ala Phe Ala Leu Leu Val Ser Arg Glu
                165                 170                 175
Lys Val Glu Glu Ala Gly Asp Val Val Ala Ser Phe Met His Arg Ile
            180                 185                 190
Glu Pro Cys Gln Ala Ile Glu Gln Phe Leu Cys Glu Asp Gln Lys Ile
        195                 200                 205
Phe Val Ala Ser Ser Pro Leu Gln Val Glu Ile Met Lys Arg Asp Leu
    210                 215                 220
Ala Lys Lys Ile Ile Arg Leu Leu Val Ala Ala Gln Tyr Ser Lys Ala
225                 230                 235                 240
Lys Met Val Val Ala Gln Tyr Leu Ala Gly Gln Gln Val Gly Trp Ser
                245                 250                 255
Phe Cys Ser Glu Val Phe Trp Glu Glu Gly Asp Ser Glu Asp Phe Val
            260                 265                 270
Glu Pro Leu Gln Glu Glu Ser Phe Ala Phe Ala Leu Glu Lys Ala Leu
        275                 280                 285
Ser Phe Leu Gln Arg Glu Gly Gly Glu Ala Gly Leu His Ala Val Ile
    290                 295                 300
Ser Leu Tyr Pro His Ser Arg Trp Gln Asp Lys Leu Thr Ile Leu Glu
```

```
305                 310                 315                 320
Ala Ile Ala Tyr Ser Glu Asn Arg Ile Ala Thr Cys Phe Leu Arg Glu
                325                 330                 335
Arg Cys Leu Gln Glu Ala Ala Ser Leu Gln Ser Ala Ala Ala Gly Ala
            340                 345                 350
Val Phe Ala Leu Phe Lys
        355
<210>40
<211>266
<212>PRT
<213>Chlamydia trachomatis
<400>40
Arg Gln Arg Lys Thr Phe Val Lys Ile Phe Ser Leu Tyr Arg Lys Met
  1               5                  10                  15
Ile Ala Arg Leu Leu Lys Ala Met Phe Gly Ser Ile Pro Cys Tyr Pro
             20                  25                  30
Gly Tyr Asn Asn Ile Pro Ala Tyr Ser Asn Ser Tyr Phe Tyr Cys Thr
         35                  40                  45
Leu Cys Asp Gly Val Val Ser Pro Thr Asn Val Asp Ile Ala Ile Val
     50                  55                  60
Val Pro Asn Lys Pro Thr Ala His Ser Glu Ser Lys Leu Ser Val Leu
 65                  70                  75                  80
Arg Cys Lys Asn His Pro Val Lys Gly Leu His Ser Gly Gly Pro Ile
                85                  90                  95
Thr Ser Leu Arg Gly Leu Ile Pro Phe Leu Ser Pro Leu Leu Glu Glu
            100                 105                 110
Thr His Gln Lys Met Leu Asn Leu Cys Ala Arg Val His Cys Leu Asp
        115                 120                 125
Val Leu Thr Val Cys Ser Thr Leu Ile Ala Ser Leu Leu Ala Ile Thr
    130                 135                 140
Gly Ala Ile Leu Gln Phe Ile Val Ala Ala Pro Ile Pro Thr Phe Ile
145                 150                 155                 160
Pro Leu Ile Leu Phe Gly Val Ala Ile Ala Phe Tyr Leu Gly Ala Xaa
                165                 170                 175
Leu Cys Thr Arg Ile Ser Gln Lys Asp Thr Leu Arg Trp Gln Ala Leu
            180                 185                 190
Ser Lys Asn Ile Ile Arg Ser Ser His Asn Val Pro Val Gln Ala Gly
        195                 200                 205
Thr Glu Arg Tyr Thr Leu Leu Thr Glu Phe Pro Pro Thr Cys Tyr Glu
    210                 215                 220
Asn His Ser Ile Asp Leu Tyr Ser Ile Arg Pro Ser Ser Trp Cys Ala
225                 230                 235                 240
Pro Arg Val Val Val Lys Lys Thr Ala Cys Lys Leu Ser Ala Arg Ile
                245                 250                 255
Gln Lys Ile Leu Lys Asn Gln Arg Gly His
            260                 265
<210>41
<211>293
<212>PRT
<213>Chlamydia trachomatis
<400>41
Phe Ala Val His Glu Leu Arg Glu Glu Thr Arg Lys Thr Asn Leu Met
  1               5                  10                  15
Gly Lys Lys Arg Val Pro Leu Pro His Val Phe Asn Ser Asn Arg Ser
             20                  25                  30
Pro Val Ile Arg Leu Ser Glu Thr Val Ser Ile Gly Gly Gly Thr Pro
         35                  40                  45
Ile Ile Ile Ala Gly Pro Cys Thr Leu Glu Ser Gln Glu His Ala Ile
     50                  55                  60
Thr Leu Gly Leu Gln Val Lys Ser Ala Gly Ala His Ile Phe Arg Gly
 65                  70                  75                  80
```

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Ser Ile Arg Lys Pro Arg Thr Asn Pro His Ser Phe Gln Gly Trp Pro
85 90 95
Pro Asp His Val Val Trp His Ser Arg Ala Lys Ala Val His Gly Leu
100 105 110
Leu Thr Glu Thr Glu Val Leu Asp Val Arg Asp Val Glu Ile Thr Ala
115 120 125
Glu His Val Asp Leu Leu Arg Val Gly Ala Arg Asn Met Gln Asn Phe
130 135 140
Val Leu Leu Asp Glu Val Gly Gln Ser His Arg Pro Val Ile Leu Lys
145 150 155 160
Arg Asn Pro Ser Ala Thr Ile Ser Glu Trp Leu Ser Ala Ala Glu Tyr
165 170 175
Leu Leu Gln His Ala Ser Cys Pro Gly Val Ile Leu Cys Glu Arg Gly
180 185 190
Ile Arg Thr Phe Glu Thr Thr Thr Arg Tyr Thr Leu Asp Leu Asn Thr
195 200 205
Val Ala Trp Ile Lys Lys Glu Thr Ser Leu Pro Val Ile Val Asp Pro
210 215 220
Ser His Ala Ser Gly Arg Arg Asp Leu Val Leu Pro Leu Ala Arg Ala
225 230 235 240
Ala Ile Ala Leu Gly Ala Asp Gly Leu Met Ile Glu Val His Glu His
245 250 255
Pro Glu Leu Ala Leu Cys Asp Gly Ser Gln His Ile Leu Pro Cys Glu
260 265 270
Leu Glu Glu Leu Gly Leu Trp Val Gln Glu Ile Gly Ser Leu Glu Thr
275 280 285
Gly Ala Val Phe Val
290

<210>42
<211>259
<212>PRT
<213>Chlamydia trachomatis
<400>42
Val Ser Met Cys Ile Lys Arg Lys Lys Thr Trp Ile Ala Phe Leu Ala
1 5 10 15
Val Val Cys Ser Phe Cys Leu Thr Gly Cys Leu Lys Glu Gly Gly Asp
20 25 30
Ser Asn Ser Glu Lys Phe Ile Val Gly Thr Asn Ala Thr Tyr Pro Pro
35 40 45
Phe Glu Phe Val Asp Lys Arg Gly Glu Val Val Gly Phe Asp Ile Asp
50 55 60
Leu Ala Arg Glu Ile Ser Asn Lys Leu Gly Lys Thr Leu Asp Val Arg
65 70 75 80
Glu Phe Ser Phe Asp Ala Leu Ile Leu Asn Leu Lys Gln His Arg Ile
85 90 95
Asp Ala Val Ile Thr Gly Met Ser Ile Thr Pro Ser Arg Leu Lys Glu
100 105 110
Ile Leu Met Ile Pro Tyr Tyr Gly Glu Glu Ile Lys His Leu Val Leu
115 120 125
Val Phe Lys Gly Glu Asn Lys His Pro Leu Pro Leu Thr Gln Tyr Arg
130 135 140
Ser Val Ala Val Gln Thr Gly Thr Tyr Gln Glu Ala Tyr Leu Gln Ser
145 150 155 160
Leu Ser Glu Val His Ile Arg Ser Phe Asp Ser Thr Leu Glu Val Leu
165 170 175
Met Glu Val Met His Gly Lys Ser Pro Val Ala Val Leu Glu Pro Ser
180 185 190
Ile Ala Gln Val Val Leu Lys Asp Ser Pro Ala Leu Ser Thr Ala Thr
195 200 205
Ile Asp Leu Pro Glu Asp Gln Trp Val Leu Gly Tyr Gly Ile Gly Val
210 215 220

Sent By: Genentech

```
Ala Ser Asp Arg Pro Ala Leu Ala Leu Glu Ile Glu Ala Ala Val Gln
225                 230                 235                 240
Glu Ile Arg Lys Glu Gly Val Leu Ala Glu Leu Glu Gln Lys Trp Gly
                245                 250                 255
Leu Asn Asn
```

<210>43
<211>278
<212>PRT
<213>Chlamydia trachomatis
<400>43

```
Thr Thr Asn Phe Arg Lys Arg Leu Arg Gly Leu Ile Met Glu Glu Thr
  1               5                  10                  15
Ser Cys Ser Gly Lys Ile Val Phe Leu Gly Thr Gly Asp Pro Glu Gly
            20                  25                  30
Ile Pro Val Pro Phe Cys Ser Cys Glu Val Cys Ser Gln Gly Arg Ile
        35                  40                  45
Cys Arg Leu Arg Ser Ser Val Trp Val Gln Ser Gln Gly Lys Asn Phe
    50                  55                  60
Ile Ile Asp Thr Gly Pro Asp Leu Arg Thr Gln Leu Leu Arg Tyr Arg
65                  70                  75                  80
Val Pro Arg Leu Asp Gly Val Phe Leu Thr His Pro His Tyr Asp His
                85                  90                  95
Ile Gly Gly Ile Asp Asp Leu Arg Ser Trp Tyr Ile Thr His Leu Glu
            100                 105                 110
Ser Val Pro Ile Ile Leu Ser Ser Phe Thr Tyr Asp Tyr Leu Cys Lys
        115                 120                 125
Thr Lys Glu His Leu Val Gln Lys Glu Thr Pro Asn Asn Ser Leu Ala
    130                 135                 140
Ala Ser Leu Arg Tyr Thr Ile Leu Asn Glu Lys Cys Gly Glu Gln Glu
145                 150                 155                 160
Phe Leu Gly Ile Pro Phe Thr Tyr Val Ser Tyr Phe Gln Lys Asn Cys
                165                 170                 175
Gln Val Thr Gly Tyr Arg Phe Gly Asp Leu Ala Tyr Leu Thr Asp Met
            180                 185                 190
Ser His Tyr Asp Glu Gln Ile Val Asp Tyr Leu Gln Gly Val Asn Thr
        195                 200                 205
Ile Ile Val Ser Ala Ser Leu Gly Val Leu Pro Lys Ala Phe Gly Ser
    210                 215                 220
Arg Thr Pro Ser His Leu Thr Leu Glu Gln Ala Asp Leu Leu Met Glu
225                 230                 235                 240
Lys Val Gly Ala Ser Arg Leu Val Ile Thr His Val Ser His Tyr Leu
                245                 250                 255
His Lys Val Leu Glu Lys Asp Val Thr Arg Glu Cys Ala Tyr Asp Gly
            260                 265                 270
Met Glu Leu Leu Trp Thr
        275
```

<210>44
<211>416
<212>PRT
<213>Chlamydia trachomatis
<400>44

```
Gly Arg Lys Glu Met Lys Lys Asp Asn Arg Asp Gly Lys Lys Glu Arg
  1               5                  10                  15
Gln Ser Ala Ile Gly Trp Arg Phe Leu Leu Pro Arg Glu Glu Gln Asp
            20                  25                  30
Pro Ala Gln Ala Leu Ala Val Cys Cys Tyr Thr Asn Arg Ala Glu Gln
        35                  40                  45
Asp Arg Val Ser Glu Tyr Val Glu Glu Leu Ile Ser Leu Ala Asn Ser
    50                  55                  60
Cys Asp Leu Ser Val Leu Glu Thr Cys Thr Trp Leu Leu Arg Ala Pro
```

```
 65                  70                  75                  80
Ser Ser Ser Phe Tyr Leu Asn Glu Gly Lys Leu Glu Glu Ile Glu Arg
                85                  90                  95
Ile Leu Glu Glu Phe Pro Thr Ile Gly Thr Leu Leu Ile Asp Glu Glu
            100                 105                 110
Ile Ser Pro Ser Gln Gln Arg Asn Leu Glu Lys Arg Leu Arg Val Val
        115                 120                 125
Val Leu Asp Arg Thr Glu Leu Ile Leu Glu Ile Phe Ala Ser Arg Ala
    130                 135                 140
Leu Thr Ala Glu Ala Gly Leu Gln Val Glu Leu Ala Gln Ala Arg Tyr
145                 150                 155                 160
Leu Leu Pro Arg Leu Lys Arg Met Trp Gly His Leu Ser Arg Gln Lys
                165                 170                 175
Ser Gly Gly Ser Gly Gly Gly Phe Val Lys Gly Glu Gly Glu Lys Gln
            180                 185                 190
Ile Glu Leu Asp Arg Arg Ile Val Arg Glu Arg Ile His Lys Leu Ser
        195                 200                 205
Arg Asp Leu Lys Asn Val Glu Arg Gln Arg Glu Glu Arg Arg Lys Ala
    210                 215                 220
Lys Lys Arg Asn Gln Ile Pro Thr Phe Ala Leu Ile Gly Tyr Thr Asn
225                 230                 235                 240
Ser Gly Lys Ser Thr Leu Leu Asn Leu Leu Thr Ser Ala Asp Thr Tyr
                245                 250                 255
Ala Glu Asn Lys Leu Phe Ala Thr Leu Asp Pro Lys Thr Arg Arg Cys
            260                 265                 270
Val Leu Pro Cys Gly Gln Arg Val Leu Leu Thr Asp Thr Val Gly Phe
        275                 280                 285
Ile Arg Lys Leu Pro His Thr Leu Val Ala Ala Phe Lys Ser Thr Leu
    290                 295                 300
Glu Ala Ala Leu Gln Glu Asp Ile Leu Leu His Val Val Asp Ala Ser
305                 310                 315                 320
His Pro Leu Ala Leu Glu His Val Glu Ile Thr Lys Ala Xaa Leu Gln
                325                 330                 335
Glu Leu Gly Ile Thr Gln Pro Gln Val Ile Thr Val Leu Asn Lys Met
            340                 345                 350
Asp Lys Val Ala Asp Gly Val Thr Ala Ser Arg Leu Arg Leu Met Ser
        355                 360                 365
Pro Asn Pro Val Cys Val Ser Ala Lys Thr Gly Glu Gly Ile Arg Glu
    370                 375                 380
Leu Phe Thr Leu His Gly Gly His Gly Thr Arg Gly Val Ser Ser Ser
385                 390                 395                 400
Asp Phe Thr Ser Ser Leu Gln Gly Ile Arg Ile Val Tyr Arg Ile Val
                405                 410                 415
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<210>45
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<212>PRT
<213>Chlamydia trachomatis
<400>45

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Arg Ile Met Met Gly Lys Gly Phe Leu Asp Cys Glu Ser Leu Val Ala
            20                  25                  30
Leu Gln Glu Met Ala Leu His Pro Ile Asp Leu Thr Ala Ser Gly Cys
        35                  40                  45
Leu Ser Glu Glu Arg Ile Gln Lys Asn Ser Leu Ser Val Glu Gly Phe
    50                  55                  60
Thr Tyr Ser Tyr Ala Thr Glu Arg Val Asp Asp Arg Cys Leu Glu Ala
 65                  70                  75                  80
Leu Gln Gly Leu Thr Glu Glu Arg Glu Leu Ile Lys Gln Met Glu Cys
                85                  90                  95
Met Gln Gln Gly Ala Ile Met Asn Arg Ile Glu Gly Phe Gln Ser Glu
```

100 105 110
Ser Arg Pro Val Leu His Thr Ala Thr Arg Ala Trp Val Arg Asp Gln
115 120 125
Asp Leu His Glu Glu Ala Ala Ala Ile Ala Arg His Ser Lys Glu Glu
130 135 140
Ala Leu Arg Leu Ala Glu Phe Leu Tyr Ile Ala Arg Ala Lys Phe Ser
145 150 155 160
Thr Leu Val Gln Ile Gly Ile Gly Gly Ser Glu Leu Gly Pro Lys Ala
165 170 175
Met Tyr Phe Ala Met Gln Gly Ser Cys Pro Ser Asp Lys Arg Ile Phe
180 185 190
Phe Val Ser Asn Ile Asp Pro Asp Asn Ala Ala Glu Val Leu Arg Glu
195 200 205
Ile Asp Leu Glu Gln Thr Leu Val Val Val Val Ser Lys Ser Gly Thr
210 215 220
Thr Leu Glu Pro Ala Ala Asn Glu Glu Leu Phe Arg Gln Ala Tyr Gln
225 230 235 240
Asn Lys Gly Leu Ser Ile Ala Glu His Phe Val Ala Val Thr Ser Gln
245 250 255
Gly Ser Pro Met Asp Asp Lys Ser Arg Tyr Leu Glu Val Phe His Leu
260 265 270
Trp Asp Ser Ile Gly Gly Arg Phe Ser Ala Thr Ser Met Val Gly Gly
275 280 285
Val Val Leu Gly Phe Ala Phe Gly Tyr Glu Ala Phe Ile Glu Phe Phe
290 295 300
Lys Glu Gln Leu Leu Ser Met Leu Met Arg
305 310

<210>46
<211>268
<212>PRT
<213>Chlamydia trachomatis
<400>46

Tyr Trp Arg Lys Ile Phe Ser Tyr Ile His Gly Arg Arg Ser Cys Ile
1 5 10 15
Arg Phe Cys Phe Arg Leu Arg Ser Phe Tyr Arg Val Phe Gln Gly Ala
20 25 30
Ala Ala Ile Asp Ala His Ala Leu Thr Pro Lys Met Arg Glu Asn Leu
35 40 45
Pro Leu Leu Ser Ala Met Leu Gly Val Trp Asn Arg Asn Leu Leu Gly
50 55 60
Tyr Pro Thr Thr Ala Val Ile Pro Tyr Ser Thr Gly Xaa Lys Tyr Phe
65 70 75 80
Thr Ala His Leu Gln Gln Cys Gly Met Glu Ser Asn Gly Lys Ser Ile
85 90 95
Ser Arg Glu Gly Lys Glu Ile Ser Phe Arg Thr Ser Pro Ile Ile Trp
100 105 110
Gly Asp Val Gly Thr Asn Cys Gln His Ser Phe Phe Gln Ser Leu His
115 120 125
Gln Gly Thr Asp Ile Val Pro Val Glu Phe Ile Gly Phe Leu His Asn
130 135 140
Gln Arg Gly Leu Asp Cys Val Leu Ser Gly Ser Ser Ser Ser Gln Lys
145 150 155 160
Leu Phe Ala Asn Leu Val Ala Gln Ser Leu Ala Leu Ala Gln Gly Arg
165 170 175
Asp Asn Ala Asn Pro Asn Lys Arg Phe Lys Gly Asn Ser Pro Ser Ser
180 185 190
Ile Leu Val Ala Gln Gln Leu Ser Pro Arg Ile Ala Gly Ser Leu Leu
195 200 205
Ala Phe Tyr Glu His Lys Phe Ala Phe Gln Gly Phe Cys Trp Gly Ile
210 215 220
Asn Ser Phe Asp Gln Glu Gly Val Ser Leu Gly Lys Glu Leu Ala Thr

225 230 235 240
Gln Ile Ile Gly Ile Met Ser Gly Asn Ala Pro Val Glu Phe Pro Glu
245 250 255
Ala Arg Gly Val Leu Arg Leu Phe Asn Val Leu Thr
260 265

<210>47
<211>339
<212>PRT
<213>Chlamydia trachomatis
<400>47
Glu Tyr Val Arg Phe Val Lys Val Lys Arg Gly Trp Leu Met Val Ser
1 5 10 15
Gln Thr Val Ser Val Ala Val Thr Gly Gly Thr Gly Gln Ile Ala Tyr
20 25 30
Ser Phe Leu Phe Ser Leu Ala His Gly Asp Val Phe Gly Leu Asp Cys
35 40 45
Gly Ile Asp Leu Arg Ile Tyr Asp Ile Pro Gly Thr Glu Arg Ala Leu
50 55 60
Ser Gly Val Arg Met Glu Leu Asp Asp Gly Ala Phe Pro Leu Leu Gln
65 70 75 80
Arg Val Gln Val Thr Thr Ser Leu His Asp Ala Phe Asp Gly Ile Asp
85 90 95
Ala Ala Phe Leu Ile Gly Ser Val Pro Arg Gly Pro Gly Met Glu Arg
100 105 110
Arg Asp Leu Leu Lys Lys Asn Gly Glu Ile Val Ala Thr Gln Gly Lys
115 120 125
Ala Leu Asn Thr Thr Ala Lys Arg Asp Ala Lys Ile Phe Val Val Gly
130 135 140
Asn Pro Val Asn Thr Asn Cys Trp Ile Ala Met Asn His Ala Pro Arg
145 150 155 160
Leu Leu Arg Lys Asn Phe His Ala Met Leu Arg Leu Asp Gln Asn Arg
165 170 175
Met His Ser Met Leu Ser His Arg Ala Glu Val Pro Leu Ser Ala Val
180 185 190
Ser Gln Val Val Val Trp Gly Asn His Ser Ala Lys Gln Val Pro Asp
195 200 205
Phe Thr Gln Ala Leu Ile Asn Asp Arg Pro Ile Ala Glu Thr Ile Ala
210 215 220
Asp Arg Asp Trp Leu Glu Asn Ile Met Val Pro Ser Val Gln Ser Arg
225 230 235 240
Gly Ser Ala Val Ile Glu Ala Arg Gly Lys Ser Ser Ala Ala Ser Ala
245 250 255
Ala Arg Ala Leu Ala Glu Ala Ala Arg Ser Ile Tyr Gln Pro Lys Glu
260 265 270
Gly Glu Trp Phe Ser Ser Gly Val Cys Ser Asp His Asn Pro Tyr Gly
275 280 285
Leu Pro Glu Asp Leu Ile Phe Gly Phe Pro Cys Arg Met Leu Ala Thr
290 295 300
Gly Glu Tyr Glu Val Ile Pro Gly Leu Pro Trp Asp Ala Phe Ile Arg
305 310 315 320
Gly Lys Met Gln Ile Ser Leu Asp Glu Ile Leu Gln Glu Lys Ala Ser
325 330 335
Val Ser Leu

<210>48
<211>266
<212>PRT
<213>Chlamydia trachomatis
<400>48
His Pro Met Gly Ser Ser Val Leu Gln Pro Leu Arg Asn Arg Pro Leu
1 5 10 15

Submitted Sequence

Phe Ser Cys Lys Glu His Arg Ser Ser Pro Met Xaa Thr Glu Trp Trp
20 25 30
Asp Lys Ala Arg Cys Glu Ile Thr Val Pro Gly Met Val Ile Ala Asp
35 40 45
Gly Leu Gly Ala Leu Tyr Ile Lys His Gly Val Thr Ile Asp Asn Asp
50 55 60
Lys Tyr Ile Ser Gly Leu Trp Asn Ala Cys Ala Ser Leu Gly Thr Gln
65 70 75 80
Tyr Tyr Asp Glu Leu Ile Asp Asp Ile Ser Ala Ile Ala Glu Phe Tyr
85 90 95
Asp His Ile Ile Val Thr Pro Gly Ala Asn Ala Asp Ile Leu Pro Glu
100 105 110
Leu Lys His Leu Pro Leu Ser Lys Val Lys Gly Gln Leu Val Glu Ile
115 120 125
Ala Trp Pro Ala Glu Ile Pro Met Pro Pro Phe Ser Ile Asn Gly Pro
130 135 140
Lys Tyr Met Val Ala Asp Thr Thr Arg Asn Thr Cys Ile Leu Gly Ala
145 150 155 160
Thr Phe Glu His Asn Gln Pro Asp Ala Thr Pro Asp Ala Gln Val Ala
165 170 175
Tyr Gln Glu Ile Met Pro Pro Ile Leu Ala Leu Phe Pro Gly Leu Lys
180 185 190
Asp Ala Gln Val Leu Asn Tyr Tyr Ala Gly Met Arg Ser Ser Ser Pro
195 200 205
Thr His Leu Pro Met Ile Ser Arg Val Gln Glu Lys Leu Trp Tyr Leu
210 215 220
Gly Gly Leu Gly Ser Lys Gly Leu Leu Tyr His Gly Leu Leu Gly Asp
225 230 235 240
Met Leu Ala Gln Ala Leu Leu Arg Asp Ser Thr Ala Tyr Ile Ala Lys
245 250 255
Glu Phe Leu Tyr Thr Pro Glu Gly Ala Ala
260 265

<210>49
<211>122
<212>PRT
<213>Chlamydia trachomatis
<400>49
Gly Ile Phe Met His Ile Ala Val Leu Gly Ala Gly Tyr Ala Gly Leu
1 5 10 15
Ser Val Thr Trp His Leu Leu Leu Tyr Thr Gln Gly Arg Ile Ser Val
20 25 30
Asp Leu Phe Asp Pro Thr Pro Ile Gly Ser Gly Ala Ser Gly Leu Ser
35 40 45
Ser Gly Leu Leu His Gly Phe Thr Gly Lys Lys Ala Ile Lys Pro Pro
50 55 60
Leu Ala Asn Leu Gly Ile Thr Thr Thr Asp Ser Leu Ile Thr Lys Ala
65 70 75 80
Ser Leu Ser Ile Gly Glu Pro Ile Val Thr Ser Asn Gly Ile Leu Arg
85 90 95
Pro Ala Ala Ser Gln Glu Gln Ala Thr Ile Phe Met Gln Arg Ala Gln
100 105 110
Glu Phe Pro Asp Xaa Asn Gly Val Val Gly
115 120

<210>50
<211>130
<212>PRT
<213>Chlamydia trachomatis
<400>50
Tyr Ile Phe Ser Ser Asn Ala Trp Asn Thr Met Leu Glu Ile Thr Gly
1 5 10 15
Val Met Val Leu Pro Ala Tyr Leu Thr Ser Ser Leu Phe Leu Val Lys

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            20                  25                  30
Phe Ser Leu Ser Lys Lys Tyr Pro Lys Gln Ala Ala Ile Lys Ala Arg
        35                  40                  45
Ile Ala Met Ile Thr Gly Leu Leu Gly Ser Leu Tyr Ser Leu Trp Leu
    50                  55                  60
Ile Tyr Ala Gly Gly Leu Gln His Leu Phe Met Val Ala Ile Leu Leu
65                  70                  75                  80
Ala Leu Gly Ile Pro Phe Tyr Val Asp Ser Gly Ile Arg His Lys Gln
                85                  90                  95
Glu Lys Thr Phe Leu Asn Arg Lys Glu Ile Leu Lys Met Thr Ile Met
            100                 105                 110
Ala Leu Ala Ala Leu Leu Ala Ile Phe Leu Phe Ser Ala Asn Lys Ile
        115                 120                 125
His Leu
    130
<210>51
<211>358
<212>PRT
<213>Chlamydia trachomatis
<400>51
Met Leu Leu Lys Lys Arg Ser Pro Thr Ser Ile Leu Gly Thr Leu Ala
  1               5                  10                  15
Leu Thr Gly Ile Val Ile Ser Tyr Met Ile Gly Gly Gly Ile Phe Ser
            20                  25                  30
Leu Pro Gln Asn Met Ala Ala Ser Ala Ser Ala Gly Ala Val Met Leu
        35                  40                  45
Ala Trp Met Leu Ser Gly Ile Gly Ile Phe Phe Ile Ala Asn Thr Phe
    50                  55                  60
Lys Thr Leu Ser Ile Ile Arg Pro Asp Leu Lys Ala Gly Ile Tyr Thr
65                  70                  75                  80
Tyr Ser Arg Glu Gly Phe Gly Pro Tyr Val Gly Phe Thr Ile Ala Trp
                85                  90                  95
Gly Tyr Trp Leu Cys Gln Ile Phe Gly Asn Val Gly Tyr Ala Val Ile
            100                 105                 110
Thr Met Asp Ala Leu Asn Tyr Phe Phe Pro Pro Tyr Phe Ala Gly Gly
        115                 120                 125
Asn Thr Ile Pro Ala Ile Leu Leu Gly Ser Leu Leu Ile Trp Ile Phe
    130                 135                 140
Asn Tyr Ile Val Leu Arg Gly Ile Arg Gln Ala Ser Phe Val Asn Ile
145                 150                 155                 160
Ile Gly Val Val Cys Thr Leu Ile Pro Leu Leu Leu Phe Ile Leu Ile
                165                 170                 175
Thr Ala Arg Phe Phe Lys Phe Ser Ile Phe Lys Thr Asp Phe Trp Gly
            180                 185                 190
Thr Ala Pro Gln His Thr Leu Gly Ser Ile Gly Ser Gln Leu Lys Ser
        195                 200                 205
Thr Met Leu Val Thr Leu Trp Ala Phe Ile Gly Ile Glu Gly Ala Val
    210                 215                 220
Val Ile Ser Gly Arg Ala Ala Asn Pro Ser Ser Val Gly Lys Ala Thr
225                 230                 235                 240
Ile Leu Gly Phe Ser Gly Cys Leu Leu Ile Tyr Val Leu Leu Ser Leu
                245                 250                 255
Leu Pro Phe Gly Ser Leu Phe Gln Tyr Gln Leu Ala Lys Ile Ala Asp
            260                 265                 270
Pro Ser Thr Ala Gly Val Leu Asn Ile Leu Val Gly Lys Trp Gly Glu
        275                 280                 285
Val Leu Met Asn Thr Gly Leu Leu Ile Ala Val Leu Thr Ser Trp Leu
    290                 295                 300
Ser Trp Thr Ile Leu Ala Ser Glu Ile Pro Tyr Ala Ala Ala Lys Asn
305                 310                 315                 320
Gly Thr Phe Pro Glu Cys Phe Ala Ile Glu Asn Ser Lys His Ala Pro
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09837-5P2P2P9

Scan-Stamped

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                325                 330                 335
Ser Phe Ser Leu Phe Met Thr Ser Gly Leu Met Gln Ile Thr Met Leu
            340                 345                 350
Leu Val Tyr Phe Leu Phe
        355
<210>52
<211>136
<212>PRT
<213>Chlamydia trachomatis
<400>52
Pro Phe Thr Asn Lys Lys Gly Gly Pro Met Pro Tyr Gly Thr Arg Tyr
  1               5                  10                  15
Pro Thr Leu Ala Phe His Thr Gly Gly Val Gly Glu Ser Asp Asp Gly
            20                  25                  30
Met Pro Pro Gln Pro Phe Glu Thr Phe Cys Tyr Asp Ser Ala Leu Leu
        35                  40                  45
Gln Ala Lys Ile Glu Asn Phe Asn Ile Val Pro Tyr Thr Ser Val Leu
    50                  55                  60
Pro Lys Glu Leu Phe Gly Asn Ile Leu Pro Val Asp Gln Cys Thr Lys
65                  70                  75                  80
Phe Phe Lys His Gly Ala Val Leu Glu Val Ile Met Ala Gly Arg Gly
                85                  90                  95
Ala Thr Val Thr Asp Gly Thr Gln Ala Ile Ala Thr Gly Val Gly Ile
            100                 105                 110
Cys Trp Gly Lys Asp Lys Asn Gly Glu Leu Ile Gly Gly Trp Ala Ala
        115                 120                 125
Glu Tyr Val Glu Phe Phe Pro Thr
    130                 135
<210>53
<211>481
<212>PRT
<213>Chlamydia trachomatis
<400>53
Thr Leu Ala Lys Lys Ser Phe Phe His Tyr Thr Gly Gly Lys Ala Leu
  1               5                  10                  15
Leu Glu Val Val Val Ser Phe Arg Ser Val Leu Leu Thr Ala Leu Leu
            20                  25                  30
Ser Leu Ser Phe Thr Thr Thr Met Gln Ala Ala His His His Tyr His
        35                  40                  45
Arg Tyr Thr Asp Lys Leu His Arg Gln Asn His Lys Lys Asp Leu Ile
    50                  55                  60
Ser Pro Lys Pro Thr Glu Gln Glu Ala Cys Asn Thr Pro Ser Leu Ser
65                  70                  75                  80
Lys Glu Leu Ile Pro Leu Ser Glu Gln Arg Gly Leu Leu Ser Pro Ile
                85                  90                  95
Tyr Asp Phe Ile Ser Glu Arg Leu Cys Leu His Gly Val Ser Val Arg
            100                 105                 110
Asn Leu Lys Gln Ala Leu Lys Asn Ser Ala Gly Thr Gln Ile Ala Leu
        115                 120                 125
Asp Trp Ser Ile Leu Pro Gln Trp Phe Asn Pro Arg Val Ser His Ala
    130                 135                 140
Pro Lys Leu Ser Ile Arg Asp Phe Gly Tyr Ser Ala His Gln Thr Val
145                 150                 155                 160
Thr Glu Ala Thr Pro Pro Cys Trp Gln Asn Cys Phe Asn Pro Ser Ala
                165                 170                 175
Ala Val Thr Ile Tyr Asp Ser Ser Tyr Gly Lys Gly Val Phe Gln Ile
            180                 185                 190
Ser Tyr Thr Leu Val His Tyr Trp Arg Glu Asn Ala Ala Thr Ala Gly
        195                 200                 205
Asp Ala Met Met Leu Ala Gly Ser Ile Asn Asp Tyr Pro Ser Arg Gln
    210                 215                 220
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Asn Ile Phe Ser Gln Phe Thr Phe Ser Gln Asn Phe Pro Asn Glu Arg
225                 230                 235                 240
Val Ser Leu Thr Ile Gly Gln Tyr Ser Leu Tyr Ala Ile Asp Gly Thr
                245                 250                 255
Leu Tyr Asn Asn Asp Gln Gln Leu Gly Phe Ile Ser Tyr Ala Leu Ser
            260                 265                 270
Gln Asn Pro Thr Ala Thr Tyr Ser Ser Gly Ser Leu Gly Ala Tyr Leu
        275                 280                 285
Gln Val Ala Pro Thr Ala Ser Thr Ser Leu Gln Ile Gly Phe Gln Asp
    290                 295                 300
Ala Tyr Asn Ile Ser Gly Ser Ser Ile Lys Trp Ser Asn Leu Thr Lys
305                 310                 315                 320
Asn Arg Tyr Asn Phe His Gly Phe Ala Ser Trp Ala Pro Arg Cys Cys
                325                 330                 335
Leu Gly Ser Gly Gln Tyr Ser Val Leu Leu Tyr Val Thr Arg Gln Val
            340                 345                 350
Pro Glu Gln Met Glu Gln Thr Met Gly Trp Ser Val Asn Ala Ser Gln
        355                 360                 365
Tyr Ile Ser Ser Lys Leu Tyr Val Phe Gly Arg Tyr Ser Gly Val Thr
    370                 375                 380
Gly His Val Phe Pro Ile Asn Arg Thr Tyr Ser Cys Gly Met Val Ser
385                 390                 395                 400
Ala Asn Leu Phe Asn Arg Asn Pro Gln Asp Leu Phe Gly Ile Ala Cys
                405                 410                 415
Ala Phe Asn Asn Val His Leu Ser Ala Ser Pro Asn Ala Lys Arg Lys
            420                 425                 430
Tyr Glu Thr Val Ile Glu Gly Phe Ala Thr Ile Gly Cys Gly Pro Tyr
        435                 440                 445
Leu Ser Phe Ala Pro Asp Phe Gln Leu Tyr Leu Tyr Pro Ala Leu Arg
    450                 455                 460
Pro Asn Lys Gln Ser Ala Arg Val Tyr Ser Val Arg Ala Asn Leu Ala
465                 470                 475                 480
Ile
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09853-1-pct.seq

<210>54
<211>204
<212>PRT
<213>Chlamydia trachomatis
<400>54

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Ser Cys Gln Pro Phe Ser Leu Phe Glu Arg Ser Ile Gln Gly Met Arg
  1               5                  10                  15
Ala Leu Gly Thr Ser Glu Gln Glu Ala Trp Asp Thr Leu Tyr Pro Asp
             20                  25                  30
Trp Leu Ser Ile Gln Arg Gln Gly Ser Ile Lys Gln Ile Glu Thr Ala
         35                  40                  45
Ile Pro Leu Leu Ile Thr Lys Val Gln Asn Gln Asn Lys Ile Val Phe
     50                  55                  60
Ala Tyr Ser Glu Arg Lys Val Cys Ala Gln Asp Val Thr Leu Glu Gln
 65                  70                  75                  80
Leu Ala Lys Ile Asn Leu Ser Phe Glu Lys Ala Asn Leu Pro Tyr Thr
                 85                  90                  95
Ser Leu Pro Ser Asn Ile Cys Phe Thr Lys Gly Val Leu Phe Gly Ser
            100                 105                 110
Glu Ile His Lys Gly Pro Gly Leu Gln His Phe Leu Asp Ala Gln Pro
        115                 120                 125
Ser Leu Pro Glu Lys Val Ile Tyr Ile Asp Asn Glu Lys Tyr Asn Val
    130                 135                 140
Leu Arg Ile Gly Glu Val Cys Lys Gln Lys Asn Ile Pro Tyr Leu Gly
145                 150                 155                 160
Ile Val Tyr Thr Ala Ser Lys Tyr His Pro Pro Ile Tyr Leu Pro Asp
                165                 170                 175
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Ile Ala Arg Ile Gln Tyr Leu Tyr Arg Gln Lys Leu Ile Ser Asn Glu
180 185 190
Ala Ala Ala Leu Leu Ser Arg His Arg Leu Asp Lys
195 200

<210>55
<211>505
<212>PRT
<213>Chlamydia trachomatis
<400>55
Gln Leu Leu Leu Met Asp Asp Phe Ala Lys Leu Tyr Leu Asn Thr Phe
1 5 10 15
Leu Gln Lys Ser Trp Arg Lys Asn Ser Met Leu Cys Thr Thr Ile Ser
20 25 30
Gly Pro Ser Phe Leu Glu Ala Lys Lys Gln Ile Leu Arg Ser Leu Lys
35 40 45
Glu Cys His Cys Phe Glu Met Arg Val Asp Leu Leu Ser Val Ser Cys
50 55 60
Leu Glu Leu Lys Lys Leu Met Glu Leu Ala Pro Ile Ser Ile Leu Ala
65 70 75 80
Trp Lys Lys Pro Glu Ser Cys Ser Gln Ala Asp Trp Ile Asp Lys Met
85 90 95
Gln Ser Leu Ala Glu Leu Asn Pro Asn Tyr Leu Asp Leu Glu Lys Asp
100 105 110
Phe Pro Glu Glu Asp Met Ile Arg Ile Arg Gln Leu His Pro Gln Ile
115 120 125
Lys Ile Ile Arg Ser Leu His Thr Ser Glu His Thr Asp Ile Ile Gln
130 135 140
Leu Tyr Ala His Met Arg Ser Ser Ala Ala Asp Tyr Tyr Lys Phe Ala
145 150 155 160
Val Ser Ser Ser Ser Thr Thr Asp Leu Leu Asp Ile Cys His Gln Lys
165 170 175
Arg Ser Leu Pro Glu Asn Thr Thr Val Val Cys Leu Gly Gly Met Gly
180 185 190
Arg Pro Ser Arg Ile Leu Ser Pro Ile Leu Gln Asn Pro Phe Thr Tyr
195 200 205
Ala Arg Ser Thr Gly Ser Ser Pro Val Ala Pro Gly Gln Phe Ser Leu
210 215 220
Lys His His Tyr Phe Tyr Asn Phe Ala Ser Leu Ser Ala Gln Ser Pro
225 230 235 240
Ile Cys Ala Leu Ile Gly Asp Thr Ser Arg Ser Ile Gly His Leu Thr
245 250 255
His Asn Pro Phe Phe Ser Gln Leu Gly Val Ala Cys Pro Tyr Ile Lys
260 265 270
Leu Pro Leu Thr Pro Gln Glu Leu Pro Lys Phe Phe Ser Thr Ile Arg
275 280 285
Thr Gln Pro Phe Leu Gly Val Ser Val Thr Ser Pro Leu Lys Thr Ala
290 295 300
Val Leu Pro Phe Leu Asp Lys Gln Ala Pro Ser Val Lys Ala Ser Gly
305 310 315 320
Ser Cys Asn Thr Leu Val Ile Arg Gln Gly Glu Ile Glu Gly His Asp
325 330 335
Thr Asp Gly Glu Gly Leu Phe Ser Val Leu Met Gln His Gln Ile Pro
340 345 350
Leu Asn Asn Gln Arg Val Ala Ile Ile Gly Ala Gly Gly Ala Ala Gln
355 360 365
Ser Ile Ala Thr Arg Leu Ser Arg Ala Asn Cys Glu Leu Leu Ile Phe
370 375 380
Asn Arg Thr Lys Ala His Ala Glu Asp Leu Ala Ser Arg Cys Gln Ala
385 390 395 400
Lys Ala Phe Ser Leu Glu Glu Leu Pro Leu His Arg Val Ser Leu Ile
405 410 415

99934-1 62262626

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Ile Asn Cys Leu Pro Pro Ser Pro Ser Cys Thr Ile Pro Lys Ala Val
            420                 425                 430
Ala Pro Cys Val Val Asp Ile Asn Thr Ile Pro Lys His Ser Ala Phe
        435                 440                 445
Thr Gln Tyr Ala Arg Ser Gln Gly Ser Ser Ile Ile Tyr Gly His Glu
    450                 455                 460
Met Phe Thr Gln Gln Ala Leu Leu Gln Phe Arg Leu Trp Phe Pro Thr
465                 470                 475                 480
Leu Ser Phe Lys His Leu Glu Lys Thr Phe Ile Arg Arg Ala Ala Val
                485                 490                 495
Leu Ala Ser Leu Phe Ser Ile Ala Pro
            500                 505
<210>56
<211>379
<212>PRT
<213>Chlamydia trachomatis
<400>56
Thr Ser Leu Tyr Pro Ile Met Ile Glu Leu Val Thr Asp Ser Pro His
  1               5                  10                  15
Pro Ile His Leu Val Asp Ser Leu Gln Asn Pro Lys Leu Phe Ala Ser
            20                  25                  30
Leu Ser Thr Asp Phe Pro Leu Ile Phe Ile Thr Asn Thr Lys Leu Asn
        35                  40                  45
Thr Leu Ile Leu Pro Pro Leu Leu Asp Leu Ala Arg Ser Leu Gly Phe
    50                  55                  60
Ser Val Glu Thr Leu Thr Ile Pro Glu Gly Glu Glu Thr Lys Thr Gly
65                  70                  75                  80
Asp Thr Phe Leu Ser Leu His Gln Gln Leu Thr Asp Leu Asn Val Pro
                85                  90                  95
Arg Gln Ala Thr Leu Ile Gly Val Gly Gly Gly Val Ile Leu Asp Ile
            100                 105                 110
Ala Gly Phe Val Ala Ala Thr His Cys Arg Gly Met Pro Phe Ile Ala
        115                 120                 125
Ile Pro Thr Thr Leu Val Ala Met Ile Asp Ala Ser Ile Gly Gly Lys
    130                 135                 140
Asn Gly Ile Asn Leu Asn His Ile Lys Asn Arg Ile Gly Ser Phe Tyr
145                 150                 155                 160
Leu Pro Lys Ala Val Trp Ile Cys Pro Arg Lys Leu Ser Phe Leu Pro
                165                 170                 175
Gln Gln Glu Leu His His Gly Ile Ala Glu Cys Ile Lys His Ala Tyr
            180                 185                 190
Ile Ala Asp Ser Ala Ile Leu Pro Leu Leu Gln Asp Pro Asn Ala Leu
        195                 200                 205
Lys Lys Glu Asp Lys Leu Ser Leu Leu Ile Lys Lys Asn Cys Leu Cys
    210                 215                 220
Lys Ala Ser Val Val Gln Gln Asp Val Arg Asp Tyr Ala Lys Arg Gln
225                 230                 235                 240
Ile Leu Asn Phe Gly His Thr Leu Gly His Ala Leu Glu Met Leu Phe
                245                 250                 255
Ile Gly Lys Ile Pro His Ser Cys Ala Ile Ser Val Gly Met Val Leu
            260                 265                 270
Glu Thr Lys Leu Ser Leu Ser Leu Gly Val Ala Arg Ser Pro Ala Ile
        275                 280                 285
Leu His Ser Leu Ile Gln Asp Leu Leu Arg Tyr Gln Leu Pro Val Ser
    290                 295                 300
Leu Lys Asp Leu Tyr Met Arg Ala Gln Ile Pro Pro His Asn Cys Asp
305                 310                 315                 320
Gln Ile Leu Ser Ala Leu Thr Tyr Asp Lys Lys Lys Gln Asn Thr Pro
                325                 330                 335
Leu Pro Pro Phe Val Met Ile Glu Glu Ile Gly Leu Ala Ala Ser Phe
            340                 345                 350
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09654.2.sequence

Asp Gly Arg Phe Cys Gln Thr Ile Ser Lys His Ile Leu Thr Lys Val
355 360 365
Leu Glu Glu Glu Phe Tyr Ala Met His Asn Asn
370 375
<210>57
<211>357
<212>PRT
<213>Chlamydia trachomatis
<400>57
Met His Asn Gln Tyr Gly Ser Ile Phe Ser Ile Thr Thr Trp Gly Glu
1 5 10 15
Ser His Gly Pro Ala Ile Gly Val Val Ile Asp Gly Cys Pro Ala Gly
20 25 30
Leu Ser Leu Ser Pro Glu Asp Phe Leu Pro Ala Met Ala Arg Arg Arg
35 40 45
Pro Gly Gln Leu His Thr Ser Pro Arg Gln Glu Pro Asp Leu Val Thr
50 55 60
Ile Leu Ser Gly Val Tyr Gln Asn Lys Thr Thr Gly Thr Pro Ile Ser
65 70 75 80
Leu Leu Ile Glu Asn Lys Asp Val Ser Ser Ser Ser Tyr Glu His Leu
85 90 95
Gln His Cys Tyr Arg Pro Gly His Ala Gln Phe Ala Tyr Glu Gly Lys
100 105 110
Tyr Gly Phe Ala Asp Asn Arg Gly Gly Gly Arg Ala Ser Ala Arg Glu
115 120 125
Thr Ala Ser Arg Val Ala Ala Gly Val Ile Ala Lys Lys Ile Leu Leu
130 135 140
Ser Gln Gly Ile Glu Thr Leu Ala Phe Leu Ser Gly Phe Gly Thr Leu
145 150 155 160
Glu Ser Lys Asn Tyr Pro Lys Leu Ser Asp Ser Leu Ile Gln Gln Val
165 170 175
His Thr Ser Pro Phe Tyr Thr Leu Leu Pro Gln Glu Glu Ile Gln Asn
180 185 190
Leu Leu Leu Leu Asn Pro Asp Asp Ser Phe Gly Gly Val Val Ser Phe
195 200 205
Ile Thr Ser Pro Leu Pro Ile Gly Leu Gly Glu Pro Val Phe Gly Lys
210 215 220
Leu Pro Ala Leu Leu Ala Ala Gly Met Met Ser Ile Pro Ala Ala Lys
225 230 235 240
Gly Phe Glu Ile Gly Ala Gly Phe Ser Ser Ser Gln Met Thr Gly Ser
245 250 255
Ala Tyr Leu Asp Ala Phe Ile Ala Asp Glu Ser Gly Val Ser Leu Gln
260 265 270
Ser Asn Arg Cys Gly Gly Ala Leu Gly Gly Ile Ser Ile Gly Gln Pro
275 280 285
Leu Glu Gly Arg Val Ala Phe Lys Pro Thr Ser Ser Ile Lys Lys Pro
290 295 300
Cys Ser Ser Val Leu Lys Asp Gly Thr Pro Ile Ala Tyr Arg Thr Pro
305 310 315 320
Asn Gln Gly Arg His Asp Pro Cys Val Ala Ile Arg Ala Val Ala Val
325 330 335
Val Glu Ala Met Leu Asp Leu Thr Leu Val Asp Leu Leu Leu Gln His
340 345 350
Arg Cys Thr Gln Leu
355
<210>58
<211>164
<212>PRT
<213>Chlamydia trachomatis
<400>58
Met Pro Thr Phe Asp Thr Thr Lys Gln Ile Phe Leu Cys Gly Leu Pro

Scanned attached

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  1               5                  10                  15
Ser Val Gly Lys Thr Ser Phe Gly Gln His Leu Ser Gln Phe Leu Ser
            20                  25                  30
Leu Pro Phe Phe Asp Thr Asp His Leu Leu Ser Asp Arg Phe His Gly
        35                  40                  45
Asp Ser Pro Lys Thr Ile Tyr Gln Arg Tyr Gly Glu Glu Gly Phe Cys
    50                  55                  60
Arg Glu Glu Phe Leu Ala Leu Thr Ser Val Pro Val Ile Pro Ser Ile
65                  70                  75                  80
Val Ala Leu Gly Gly Cys Thr Pro Leu Ile Glu Pro Ser Tyr Ala His
                85                  90                  95
Ile Leu Gly Arg Asn Asn Ala Leu Leu Val Leu Leu Glu Leu Pro Ile
            100                 105                 110
Ala Thr Leu Cys Gln Arg Leu Gln His Arg Ser Ile Pro Glu Arg Leu
        115                 120                 125
Ala His Ala Pro Ser Leu Glu Asp Ala Leu Ser Gln Arg Leu Asp Lys
    130                 135                 140
Leu Arg Ser Leu Thr Ile Lys Met Pro Ser Leu Tyr Glu Gln Arg Leu
145                 150                 155                 160
Pro Leu Lys Leu
```

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<210>59
<211>440
<212>PRT
<213>Chlamydia trachomatis
<400>59

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Met Val Ser Ser Asn Gln Ala Leu Leu Ile Ser Pro Ser Ile Pro Tyr
  1               5                  10                  15
Gly Glu Ile Ala Val Pro Pro Ser Lys Ser His Ser Leu Arg Ala Ile
            20                  25                  30
Leu Phe Ala Ser Leu Ser Lys Gly Thr Ser Ile Ile Glu Asn Cys Leu
        35                  40                  45
Phe Ser Pro Asp Ser Gln Thr Met Leu Thr Ala Cys Glu Lys Met Gly
    50                  55                  60
Ala His Val Arg Arg Ile Gly Asp Ser Leu His Ile Gln Gly Asn Pro
65                  70                  75                  80
Asp Pro His His Cys His Pro Pro Tyr Phe His Met Gly Asn Ser Gly
                85                  90                  95
Ile Ala Leu Arg Phe Leu Thr Ala Leu Ser Thr Leu Ser Pro Thr Pro
            100                 105                 110
Thr Leu Ile Thr Gly Ser His Thr Leu Lys Arg Arg Pro Ile Ala Pro
        115                 120                 125
Leu Leu Ser Ser Leu Lys Gln Leu Gly Ala His Ile Arg Gln Lys Thr
    130                 135                 140
Ser Ser Ser Ile Pro Phe Thr Ile His Gly Pro Leu Ser Pro Gly His
145                 150                 155                 160
Val Thr Ile Ser Gly Gln Asp Ser Gln Tyr Ala Ser Ala Leu Ala Ile
                165                 170                 175
Thr Ala Ala Leu Ala Pro Tyr Pro Leu Ser Phe Ser Ile Glu Asn Leu
            180                 185                 190
Lys Glu Arg Pro Trp Phe Asp Leu Thr Leu Asp Trp Leu His Ser Leu
        195                 200                 205
Asn Ile Ser Phe Leu Arg Asp Gln Asp Ser Leu Thr Phe Pro Gly Gly
    210                 215                 220
Gln Ser Leu Glu Ser Phe Ser Tyr Ser Val Pro Gly Asp Tyr Ser Ser
225                 230                 235                 240
Ala Ala Phe Leu Ala Ser Phe Gly Leu Leu Ser Ser Ser Ser Lys Pro
                245                 250                 255
Thr Ile Leu Arg Asn Leu Pro Ser Gln Asp Ser Gln Gly Asp Lys Leu
            260                 265                 270
Leu Phe Ser Leu Leu Lys Gln Leu Gly Ala His Ile Leu Ile Glu Lys
```

Sequence Listing

```
        275                 280                 285
His His Ile Glu Met His Pro Ser Ser Phe Ser Gly Gly Glu Ile Asp
    290                 295                 300
Met Asp Pro Phe Ile Asp Ala Leu Pro Ile Leu Ala Val Leu Cys Cys
305                 310                 315                 320
Phe Ala Lys Asn Pro Ser Arg Leu Tyr Asn Ala Leu Gly Ala Lys Asp
                325                 330                 335
Lys Glu Ser Asn Arg Ile Glu Ala Ile Ala His Glu Leu Gln Lys Met
            340                 345                 350
Gly Gly Ser Val His Pro Thr Arg Asp Gly Leu Tyr Ile Glu Pro Ser
        355                 360                 365
Arg Leu His Gly Ala Val Val Asp Ser His Asn Asp His Arg Ile Ala
    370                 375                 380
Met Ala Leu Ala Val Ala Gly Val His Ala Ser Ser Gly Gln Thr Leu
385                 390                 395                 400
Leu Cys Asn Thr Gln Cys Ile Asn Lys Ser Phe Pro His Phe Val Ile
                405                 410                 415
Ala Ala Gln Thr Leu His Ala Asn Val Arg His Tyr Gln Ala Asp Phe
            420                 425                 430
Pro Leu Arg Ser Ser Phe Cys Arg
        435                 440
<210>60
<211>142
<212>PRT
<213>Chlamydia trachomatis
<400>60
Glu Lys Leu Ser Asn Asp Cys Pro Pro Gly Lys Val Lys Glu Ser Trp
  1               5                  10                  15
Ser Leu Lys Lys Glu Met Phe Lys Glu Cys Ser Gln Ser Lys Val Arg
            20                  25                  30
Ser Asn Gln Gly Arg Ser Leu Arg Phe Ser Ile Glu Lys Glu Arg Gly
        35                  40                  45
Tyr Gly Ala Lys Ala Ala Val Ile Ala Asn Ala Asp Ala Tyr Trp Glu
    50                  55                  60
Ser Cys Pro Glu Ile Val Thr Trp Pro Gly Asp Asn Gly Pro Trp Met
65                  70                  75                  80
Val Lys Gly Ile Glu Glu Asp Val Phe Trp Arg Met Cys Ala Pro Ser
                85                  90                  95
Cys Phe Lys Leu Asp Arg Arg Gly Ala Ile Gly Arg Arg Leu Ser Val
            100                 105                 110
Trp Asp Pro Val Ile Lys Val Gly Val Gly Asp Lys Val Glu Arg Ala
        115                 120                 125
Val Arg Asn Arg Arg Ala Ile Pro Glu Phe Pro Ile Trp Lys
    130                 135                 140
<210>61
<211>463
<212>PRT
<213>Chlamydia trachomatis
<400>61
Asp Arg Ser Cys Ser Glu Asn Asp Ile Gln Thr Glu Gly Lys Glu Arg
  1               5                  10                  15
Thr Leu Leu Gly Ala Gly Leu Thr Gly Ala Gly Leu Val Leu Lys Leu
            20                  25                  30
Gly Ser Ser Tyr Ile Pro Gly Gly Tyr Gly Ser Ala Leu Gly Lys Leu
        35                  40                  45
Gly Asp Val Ser Tyr Asn Lys Gly Arg Gly Ala Leu Phe Ala Gly Phe
    50                  55                  60
Ala His Tyr Leu Tyr Val Arg Phe Phe Gln Ser Lys Lys Ala Ala Ser
65                  70                  75                  80
Gly Glu Ala Leu Thr Pro Glu Glu Met Leu Ile Glu Gly Ala Lys Ile
                85                  90                  95
```

```
Arg Lys Leu Ala Asn Gly Leu Val Leu Leu Gly Val Gly Phe Ala Cys
            100                 105                 110
Leu Gly Ile Ala Leu Ala Val Val Gly Thr Leu Ala Val Thr Gly Gly
        115                 120                 125
Ala Ala Thr Ala Leu Ile Val Leu Ala Pro Pro Leu Ile Ser Leu Gly
    130                 135                 140
Ile Ser Leu Val Ile Ser Asn Met Leu His Thr Thr Leu Gly Gln Trp
145                 150                 155                 160
Arg Ala Phe Ala Arg Ala Gln Gln Asp Gln Asp Leu Leu Val Asp Thr
                165                 170                 175
Lys Leu Lys Asn Ile Ser Gln Ala Asp Phe Ser Tyr Arg Val Asp Asn
            180                 185                 190
Asn Ile Glu Val Val Val Asp Pro Arg Glu Ser Asn Leu Pro Ser Ile
        195                 200                 205
Glu Arg Leu Pro Gln Gly Glu Ile Asp Ala Ala Leu Ser Leu Thr Lys
    210                 215                 220
Lys Gln Gln Arg Ile Leu Ile Leu Ser Gly Leu Leu Leu Leu Ala Gly
225                 230                 235                 240
Val Thr Cys Thr Leu Leu Ala Gly Phe Gly Gly Leu Pro Ala Val Gln
                245                 250                 255
Val Leu Leu Leu Phe Ser Ile Gly Arg Ala Val Leu Leu Ser Ala Val
            260                 265                 270
Pro Met Val Val Ser Gly Met Val His Val Ala His Gln Leu Lys Ala
        275                 280                 285
Arg Leu Gln Ile Ser Leu Ala Arg Arg Arg Glu Ala Arg Leu Lys Ala
    290                 295                 300
Arg Met Ile Arg Glu Met Asp Asn Arg Arg Trp Gly Glu Ser Arg Ala
305                 310                 315                 320
Ser Leu Leu Ser Lys Lys Glu Gln Glu Glu Thr Trp Lys Leu Val Gly
                325                 330                 335
Lys Pro Val Ile Phe Gln Thr Glu Gln Ala Ile Arg Glu Tyr Val Asn
            340                 345                 350
Gly Ala Thr Lys Glu Glu Arg Phe Gln Ser Ile Leu Val Ala Thr Ile
        355                 360                 365
Ile Leu Leu Ala Gly Leu Gly Val Leu Ser Leu Thr Leu Ile Pro Gly
    370                 375                 380
Leu Ala Pro Ile Ser Gly Gly Ile Leu Ala Ile Gly Gly Val Leu Leu
385                 390                 395                 400
Gly Ile Ser Ile Thr Met Tyr Leu Gln Arg Phe Ile Gln Trp Leu Tyr
                405                 410                 415
Glu Gln Leu Ile Lys Leu Arg Asp Tyr Ile Gln Asn Arg Gln Ser Val
            420                 425                 430
Ile Val Gln Gly Ala Ser Ala Cys Asp Phe Asp Ala Glu Asp Ile Ile
        435                 440                 445
Val Asp Leu Val Ala Asp Leu Leu Arg Ser Met Gly Ile Leu Leu
    450                 455                 460
<210>62
<211>253
<212>PRT
<213>Chlamydia trachomatis
<400>62
Met Arg Val Ala Asp Ser Ile Met Lys Lys Ser Ile Gly Leu Val Gly
  1               5                  10                  15
Asp Thr Gly Arg Met Gly Val Leu Leu Thr Gln Ala Leu Leu Cys Arg
             20                  25                  30
Pro His Cys Phe Leu Gly Lys Gly Phe Ser Arg Arg Ser Gln Thr Ser
         35                  40                  45
Leu Glu Glu Val Val Thr Glu Asn Asp Ile Leu Ile Asp Phe Ser Ser
     50                  55                  60
Pro Glu Val Thr Ser Leu Leu Leu Asp Phe Leu Leu Lys Thr Pro Arg
 65                  70                  75                  80
```

```
Pro Val Ile Ile Gly Thr Thr Gly Phe Thr Asn Asp Ser Gly Val Lys
                85                  90                  95
Thr Lys Leu Ser Ala Leu Ser Glu Tyr Val Pro Val Val Val Cys Ala
            100                 105                 110
Asn Thr Ser Leu Gly Ala Tyr Val Gln Lys Arg Leu Ala Ala Phe Ala
        115                 120                 125
Ala Lys Leu Phe Ser Thr Ser Tyr Asp Val Arg Ile Leu Glu Thr His
    130                 135                 140
His Arg Ala Lys Ala Asp Ala Ile Ser Gly Thr Ala Ile Ser Leu Ala
145                 150                 155                 160
Glu Ala Ile Arg Ser Ala Lys Ala Glu Ser Cys Glu Glu Glu Pro Glu
                165                 170                 175
Pro Phe Ile Glu Met His Gly Ser Arg Leu Gly Asn Val Cys Gly Glu
            180                 185                 190
His Glu Val Ser Phe Val Gly Glu Asp Glu Arg Phe Val Ile Arg His
        195                 200                 205
Glu Val Phe Ser Arg Arg Val Phe Ser Asp Gly Val Leu Leu Ile Leu
    210                 215                 220
Glu Lys Ile Met Gly Glu Gly Leu Pro Lys Gly Tyr Tyr Thr Ser Asp
225                 230                 235                 240
Val Leu Tyr Glu Ser Leu Phe Gln Glu Lys Val Phe Gly
                245                 250
```

Sequence Listing

<210>63
<211>337
<212>PRT
<213>Chlamydia trachomatis
<400>63

```
Lys Leu Arg Met Thr Met Arg Ile Ala Ile Leu Gly Ala Thr Gly Leu
  1               5                  10                  15
Val Gly Gln Lys Leu Ile Ala Leu Leu Gln Asn His Lys Gln Trp Glu
             20                  25                  30
Ile Ala Glu Leu Gly Ala Ser Ser Glu Lys His Ala Leu Arg Tyr Glu
         35                  40                  45
Ser Ala Cys Leu Trp Gln Glu Pro Leu Met Glu Met Pro Glu Ser Val
     50                  55                  60
Arg Asp Leu Ser Ile Arg Ser Val Glu Glu Ile Glu Ser Asn Ile Val
 65                  70                  75                  80
Val Ser Cys Leu Pro Ser Ser Val Ala Phe Ser Ala Glu Thr Thr Cys
                85                  90                  95
Leu Ser Ser Gly Lys Ile Val Phe Ser Asn Ala Thr Ala Tyr Arg Met
            100                 105                 110
His Lys Ala Val Pro Ile Leu Ile Pro Glu Ile Asn Ser Asp His Leu
        115                 120                 125
Ser Leu Leu Glu Glu Gln Pro Phe Leu Gly Lys Ile Ile Thr Asn Ser
    130                 135                 140
Asn Cys Cys Val Ser Gly Ile Ala Leu Ala Leu Lys Pro Leu Leu Leu
145                 150                 155                 160
Phe Asn Ile Glu His Val His Val Ile Thr Leu Gln Ser Ala Ser Gly
                165                 170                 175
Ala Gly Tyr Pro Gly Val Ser Ser Leu Asp Leu Ile Gly Asn Thr Val
            180                 185                 190
Pro Tyr Ile Leu Gly Glu Glu Glu Lys Ile Leu Arg Glu Thr Val Lys
        195                 200                 205
Ile Leu Gly Gln Pro Gly Phe Pro Ala Glu Phe Ser Ile Thr Ala Ser
    210                 215                 220
Val His Arg Val Pro Val Ala His Gly His Val Ile Ser Val His Val
225                 230                 235                 240
Met Phe Asp Gln Glu Val Asp Leu Glu Glu Ile Thr Ser Cys Tyr Glu
                245                 250                 255
Lys Asp Ser Ala Thr Tyr Val Leu Tyr Asp Ser Pro Trp His Pro Gln
            260                 265                 270
```

```
Val Arg Lys Asp Leu Ala His Asp Asp Met Arg Leu His Ile Gly Pro
        275                 280                 285
Ile Ser Tyr Gly Gly Asn Thr Arg Thr Ile Lys Met Cys Ile Leu Leu
    290                 295                 300
His Asn Leu Val Arg Gly Ala Ala Gly Ala Leu Ile Ala Asn Met Asn
305                 310                 315                 320
Leu Phe Arg Asp Arg Gly Gly Phe Val His Gln Glu Arg Leu Thr Tyr
                325                 330                 335
Ala
```

<210>64
<211>432
<212>PRT
<213>Chlamydia trachomatis
<400>64

```
Arg Met Leu Arg Gln Lys Thr Ala Pro Leu Val Cys Lys Phe Gly Gly
  1                 5                  10                  15
Thr Ser Val Gly Thr Ala Gln Ser Ile Arg Arg Val Cys Glu Ile Ile
             20                  25                  30
Gln Glu Glu Arg Pro Ser Phe Val Val Val Ser Ala Val Ala Gly Val
         35                  40                  45
Thr Asp Trp Leu Glu Glu Phe Cys Arg Leu Pro Lys Gly Lys Arg Ala
     50                  55                  60
Ala Leu Thr Glu Lys Ile Arg Glu Arg His Glu Ser Ile Ala Lys Glu
 65                  70                  75                  80
Leu Gly Ile Glu Val Ser Leu Ala Ile Phe Trp Glu Ile Leu Glu His
                85                  90                  95
Phe Glu Asp Val Glu Glu Leu Leu Ser Glu Asp Gln Ala Arg Ile Leu
            100                 105                 110
Ala Ile Gly Glu Asp Leu Ser Ser Thr Leu Ile Cys Ser Tyr Cys Cys
        115                 120                 125
Thr Tyr Val Leu Pro Leu Lys Arg Leu Glu Ala Arg Gln Val Ile Leu
    130                 135                 140
Thr Asp Ser Gln Phe Leu Arg Ala Val Pro Asp Leu Ala Leu Met Gln
145                 150                 155                 160
Thr Ala Trp Gly Glu Leu Ala Leu Gln Glu Asp Ala Ile Tyr Leu Met
                165                 170                 175
Gln Gly Phe Leu Gly Ala Thr Ser Ser Gly Lys Thr Thr Val Leu Gly
            180                 185                 190
Arg Gly Gly Ser Asp Phe Ser Ala Ser Leu Ile Gly Glu Leu Cys Lys
        195                 200                 205
Ala Arg Glu Leu Arg Ile Tyr Thr Asp Val Cys Gly Val His Thr Ala
    210                 215                 220
Asp Pro Lys Ile Leu Lys Asp Thr Gln Leu Ile Asp Ser Leu Thr Phe
225                 230                 235                 240
Glu Glu Met Gln Glu Leu Ala Ser Ser Gly Ala Lys Val Leu His Gln
                245                 250                 255
Asp Met Leu Lys Pro Cys Val Arg Ala Lys Val Pro Ile Phe Val Thr
            260                 265                 270
Ser Thr Phe Asn Val Thr Lys Glu Gly Thr Trp Ile Cys Ala Ser Leu
        275                 280                 285
Asn Glu Ser Thr Glu Gly Pro Val Ile Lys Ala Leu Ser Leu Lys Ser
    290                 295                 300
Asn Gln Ala Leu Trp Phe Val Glu Tyr Asn Ser Pro Leu Val Arg Leu
305                 310                 315                 320
Glu Asp Val Leu Gly Cys Val Arg Ser Leu Gly Phe Val Pro Gly Val
                325                 330                 335
Val Met Ala Gln Ser Leu Gly Val Tyr Phe Thr Ile Asp Trp Glu Glu
            340                 345                 350
Tyr Pro Gln Ala Ile Thr Lys Ala Leu Glu Ala Phe Gly Thr Val Ser
        355                 360                 365
```

```
Cys Glu Gly Pro Leu Ser Leu Val Ala Leu Val Gly Ala Lys Leu Ala
    370                 375                 380
Ser Trp Ser Met Ser Arg Val Phe Glu Ala Leu His Arg Thr Pro Val
385                 390                 395                 400
Leu Cys Trp Ser Gln Thr Asp Thr Val Ile Asn Leu Ile Ile Asn Lys
                405                 410                 415
Asp Phe Gly Val Ala Val Thr Glu Leu Leu His Asp Cys Leu Phe Lys
            420                 425                 430
<210>65
<211>286
<212>PRT
<213>Chlamydia trachomatis
<400>65
Met Ser Val Leu Gly Ala Cys Ile Thr Pro Phe Lys Ala Asp Leu Ser
  1               5                  10                  15
Ile Asp Phe Ala Ala Leu Glu Ser Val Val Arg Ser Gln Glu His Ala
            20                  25                  30
Gly Asn Gly Ile Ile Leu Phe Gly Ser Thr Gly Glu Gly Leu Ser Leu
        35                  40                  45
Thr Tyr Glu Glu Lys Leu Ser Ile Leu Ser Phe Val Ser Thr Leu Asn
    50                  55                  60
Leu Asn Val Pro Ile Phe Val Gly Val Thr Ala Thr Ser Val Gln Glu
65                  70                  75                  80
Thr Met Ser Trp Ile Asp Phe Ala Gln Gln Trp Pro Ile Asp Gly Phe
                85                  90                  95
Leu Val Pro Thr Pro Leu Tyr Thr Arg Pro Gly Leu Asn Gly Gln Lys
            100                 105                 110
Ala Trp Phe Asp Arg Val Leu Ser Val Ser Arg Lys Pro Ile Ile Leu
        115                 120                 125
Tyr Asn Asn Pro Ile Arg Thr Gly Val Ser Leu Tyr Pro Glu Val Val
    130                 135                 140
Lys Ser Phe Val Ser His Pro Leu Cys Ile Gly Val Lys Asp Ser Gly
145                 150                 155                 160
Gly Ser Ala Gln Ala Cys Glu Leu Phe Ala Glu Ser Gly Leu Arg Val
                165                 170                 175
Phe Cys Gly Asp Asp Asn Leu Trp Pro Asp Met Arg Leu Ser Gly Ala
            180                 185                 190
Ser Gly Val Ile Ser Val Leu Ala Asn Val Trp Pro Glu Leu Ala Arg
        195                 200                 205
Asp Tyr Val Ala Leu Gly Arg Pro Ile Glu Ala Trp Lys Lys Val Cys
    210                 215                 220
Ser Trp Leu Asn Leu Ser Thr Asn Pro Leu Gly Ile Lys Ala Leu Met
225                 230                 235                 240
Ala Ala Gln Lys Met Ile Glu Cys Asp Ala Val Arg Pro Pro Leu Ser
                245                 250                 255
Ile Arg Asp Leu Gln Arg Arg Asp Glu Leu Ala Asp Ile Leu Ala Cys
            260                 265                 270
Arg Ala Thr Leu Gln Thr Glu Leu Leu Ser Val Cys Arg Gln
        275                 280                 285
<210>66
<211>214
<212>PRT
<213>Chlamydia trachomatis
<400>66
Gly Asp Phe Thr Thr Phe Met Arg Lys Ala Phe Leu Phe Gly Ser Ile
  1               5                  10                  15
Gly Cys Leu Cys Leu Leu Val Thr Leu Glu Ser Ser Gly Glu Gly Leu
            20                  25                  30
Tyr Arg Gly Ser Asn Gly Arg Met Thr Phe Ile Ser Ala Val Glu Ser
        35                  40                  45
Ala Asn Ser Gln Leu Glu Leu Glu Arg Lys Lys Glu Gln Arg Val Ile
```

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```
     50                  55                  60
Glu Ile Leu Lys Glu Ile Cys Lys Glu Ile Gly Val Tyr Glu Ser Leu
 65                  70                  75                  80
Phe Asp Glu Val Thr Asp Ser Leu Glu Phe Cys Glu Leu Leu Lys Lys
                85                  90                  95
Ile Leu Ala Glu Lys Asp Ser Glu Asp Phe Leu Glu Asp Val Ser Thr
            100                 105                 110
Gln Asp Ser Leu Ser Ser Asn Glu Gln Pro Ile Ser Glu Gln Thr Ile
        115                 120                 125
Gly Asp Arg Val Glu Glu Ser Ala Met Ile Ser Glu Cys Met Ile Lys
    130                 135                 140
Asp Val Leu Asn Ala Leu Gln Gln Ser Thr Glu Ser Phe Gln Arg Lys
145                 150                 155                 160
Glu Glu Glu Ala Ser Phe Leu Glu Arg Lys Asp Leu Glu Leu Arg Glu
                165                 170                 175
Arg Glu Leu Ala Phe Lys Glu Glu Arg Leu Ser Trp Glu Arg Glu Lys
            180                 185                 190
Ala Glu Lys Glu Trp Ala Trp Lys Lys Glu Gln Tyr Ile Arg Asp Leu
        195                 200                 205
Val Lys Arg Glu Gln Lys
    210
<210>67
<211>196
<212>PRT
<213>Chlamydia trachomatis
<400>67
Met Val Ala Lys Ser Ile Thr Lys Glu Tyr Ser Glu Thr Leu Ile Ser
  1               5                  10                  15
Asn Pro Phe Val Lys Val Ile Ala Gly Ser Leu Phe Leu Ala Cys Leu
            20                  25                  30
Ala Lys Ile Ser Ile Ser Leu Pro Phe Thr Pro Val Pro Ile Thr Tyr
        35                  40                  45
Gln Thr Leu Gly Val Phe Cys Leu Gly Leu Val Met Thr Pro Gln Met
    50                  55                  60
Ala Val Thr Thr Val Val Ala Tyr Leu Leu Glu Gly Leu Phe Phe Pro
 65                  70                  75                  80
Val Phe Cys Ser Pro Met Cys Gly Ile Ala Val Phe Cys Gly Pro Thr
                85                  90                  95
Ala Gly Tyr Leu Phe Ser Phe Val Pro Ala Val Ala Leu Ile Ser Trp
            100                 105                 110
Leu Tyr Gly Lys Xaa Gly Arg Ser Glu Ala Lys Ser Trp Asp Val Ala
        115                 120                 125
Met Ile Leu Phe Val Gly Gly Gly Val Ser Leu Cys Leu Gly Ala Leu
    130                 135                 140
Trp Leu Ala Cys Phe Leu Lys Ser Ile Gly Val Ser Asn Ser Leu Asp
145                 150                 155                 160
Leu Val Gly Ala Phe Lys Ile Gly Val Leu Pro Phe Leu Ile Gly Lys
                165                 170                 175
Ile Val Lys Ile Ala Leu Val Val Gln Gly Arg Ser Val Arg Arg Leu
            180                 185                 190
Phe Ile Arg Lys
        195
<210>68
<211>186
<212>PRT
<213>Chlamydia trachomatis
<400>68
Leu Gln Gln Arg Asn Asn Asn Lys Thr His Ser Thr Gln Arg Ser Phe
  1               5                  10                  15
Met Ala Thr Pro Ile Ala Val Pro Pro Ser Ser Ala Ser Ser Gln Ser
            20                  25                  30
```

```
Ser Pro Asp Val Ser Pro His Ser Ser Ser Ala Ser Ala Lys Asn Ala
          35                  40                  45
Ile Tyr Asn Thr Lys Gln Gly Arg Pro Trp Pro Val Ile Val Ser Gln
     50                  55                  60
Ile Ala Leu Leu Ile Met Arg Ile Ser Ser Ile Ile Val Leu Gly Leu
 65                  70                  75                  80
Gly Ile Ala Phe Leu Ala Ser Asn Pro Met Leu Gly Trp Ser Leu Leu
                 85                  90                  95
Ile Ala Ala Ile Thr Leu Val Ile Ser Ser Leu Leu Cys Ala Ile Ala
            100                 105                 110
Ile Ser Val Tyr Gln Thr Leu Thr Ile Arg Lys Leu Gln Ser Glu Val
        115                 120                 125
Ser Ser Leu Glu Arg Gln Ser Gly Val Ile Phe Ile Glu Glu Gly Val
    130                 135                 140
Glu Asp Ala Leu Leu Ser Phe Glu Ser Pro Phe Ala Gly Leu Glu Asp
145                 150                 155                 160
Asp Leu Val Ser Pro Ile Ser Pro Pro Leu Ser Pro Glu Asp Arg Ser
                165                 170                 175
Tyr Arg Ser Ser Gly Asp Ala Ser Arg Ser
            180                 185
<210>69
<211>124
<212>PRT
<213>Chlamydia trachomatis
<400>69
Thr Glu Ile Ala Ile Ala His Asn Arg Glu Glu Ile Thr Arg Val Ile
  1               5                  10                  15
Ala Ala Ile Ser Arg Leu His Pro Asn Ile Gly Phe Asp Ala Arg Asn
             20                  25                  30
Ala Ile Pro Asn Pro Ser Thr Ile Ile Glu Glu Ile Leu Ile Ile Lys
         35                  40                  45
Arg Ala Ile Trp Leu Thr Met Thr Gly Gln Gly Leu Pro Cys Leu Val
     50                  55                  60
Leu Tyr Ile Ala Phe Leu Ala Glu Ala Glu Asp Glu Cys Gly Glu Thr
 65                  70                  75                  80
Ser Gly Glu Asp Cys Asp Asp Ala Glu Glu Gly Gly Thr Ala Ile Gly
                 85                  90                  95
Val Ala Ile Lys Asp Leu Trp Val Glu Trp Val Leu Leu Leu Phe Leu
            100                 105                 110
Cys Cys Asn Gln Leu Gly Thr Gly Val Phe Thr Gln
        115                 120
<210>70
<211>112
<212>PRT
<213>Chlamydia trachomatis
<400>70
Lys His Met Pro Val Val Gln Lys Pro Ser Val Leu Glu Tyr Ala Pro
  1               5                  10                  15
Val Ser Pro Ser Thr Thr Ser Asp Ser Lys Ile Pro Asn His Arg Ser
             20                  25                  30
Gly Ala Ser Cys Ile Lys Ile Ser Met Ile Leu Ala Cys Ser Leu Leu
         35                  40                  45
Ala Val Gly Ile Ile Leu Ala Ile Ala Leu Leu Ala Ser Pro Gly Ser
     50                  55                  60
Leu Ala Tyr Val Leu Val Ala Gly Ile Leu Ala Leu His Ala Val Leu
 65                  70                  75                  80
Ala Leu Ala Leu Gly Leu Trp Ile Ser Ser Ser Thr Lys His Ala Leu
                 85                  90                  95
Leu Ser Glu Asn Ser Gly Thr Glu Leu Ile Thr Thr Lys Lys Gln Gln
            100                 105                 110
<210>71
```

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<211>641
<212>PRT
<213>Chlamydia trachomatis
<400>71

```
Leu Ile Leu Lys Leu Lys Val Tyr Leu Leu Phe Phe Leu Phe Phe Ile
  1               5                  10                  15
Met Thr Thr Asp Gln Pro Phe Thr Asn Lys Leu Ile Thr Glu Lys Ser
             20                  25                  30
Pro Tyr Leu Leu Leu Tyr Ala His Thr Pro Val Asp Trp Tyr Pro Trp
         35                  40                  45
Ser Ala Glu Ala Phe Gln Lys Ala Ser Ala Glu Asp Lys Pro Ile Phe
     50                  55                  60
Leu Ser Ile Gly Cys Thr His Ser Lys Trp Cys Gln Val Met Leu Lys
 65                  70                  75                  80
Glu Asn Tyr Glu Asn Pro Glu Val Ala Ala Ile Leu Asn Lys Tyr Phe
                 85                  90                  95
Val Cys Ile Lys Val Asp Lys Glu Glu Leu Pro His Leu Ala Asn Leu
            100                 105                 110
Tyr Phe Glu Leu Ser Gln Met Leu Ser Val Ser Gly Glu Val Gln Asp
        115                 120                 125
Ser Pro Thr Trp Pro Leu Asn Val Phe Leu Thr Pro Asn Leu Leu Pro
    130                 135                 140
Phe Phe Ser Leu Gly Tyr Ala Ser Phe Ala Gly Lys Met Arg Ala Ser
145                 150                 155                 160
Ser Phe Val Gln Met Leu Glu Lys Leu His Ile Met Trp Glu Asp Arg
                165                 170                 175
Glu Asp Arg Glu Val Phe Val Gln Gln Ala Glu Arg Val Leu Glu Val
            180                 185                 190
Ala Ala Phe Leu Glu Gly Cys Ser Cys Lys Lys Glu Ser Leu Glu Glu
        195                 200                 205
Glu Cys Leu Lys Arg Val Thr Glu Ala Ile Tyr Arg Asp Val Asp Ala
    210                 215                 220
Gln Phe Gly Gly Val Lys Ser Phe Pro Lys Thr Leu Pro Gly Leu Leu
225                 230                 235                 240
Ser Leu Phe Leu Leu Arg Val Gly Ala Glu Tyr Gln Asp Ser Arg Ala
                245                 250                 255
Ile Phe Phe Val Asn Arg Ser Leu Gln Ser Val Ala Asn Gly Gly Ile
            260                 265                 270
Phe Asp His Leu Ala Gly Gly Phe Phe Arg Tyr Thr Ile Asp Asp Arg
        275                 280                 285
Trp Leu Ile Pro Cys Phe Glu Lys Arg Ala Phe Asp Asn Ala Leu Met
    290                 295                 300
Met Leu Val Tyr Thr Glu Ala Gly Val Tyr Met Arg Asn Pro Glu Phe
305                 310                 315                 320
Val Ile Val Ala Lys Arg Val Leu Asn Tyr Leu Ile Lys Glu Leu Thr
                325                 330                 335
Asp Pro Lys Ser Gly Ser Phe Tyr Leu Ser Glu Tyr Gly Gln Gln Trp
            340                 345                 350
Ala Gly Thr Asp Ile Asp Ser Gln Tyr Thr Trp Ser Gly Glu Glu Ile
        355                 360                 365
Arg Ser Leu Leu Gly Glu Gln Ala Glu Met Phe Cys Glu Tyr Tyr Asp
    370                 375                 380
Val Ser Arg Glu Gly Ile Cys Asn Gly Arg Asn Ile Leu His Val Ser
385                 390                 395                 400
Pro Tyr Met Asn Arg Lys Glu Ile Glu Glu Arg Tyr His Cys Ser Leu
                405                 410                 415
Glu Glu Phe Gln Lys Lys Leu Glu Ala Ser Arg Glu Lys Leu Cys Val
            420                 425                 430
Tyr Arg Glu Gly Lys Thr Gln Ala Ser Lys Asp Asp Gln Ser Phe Thr
        435                 440                 445
Phe Gln Asn Gly Trp Gly Ile Phe Ser Leu Ile Lys Thr Gly Ile Leu
```

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    450                 455                 460
Leu Gly Glu Pro Glu Cys Phe Val Val Ala Glu Arg Cys Gly Glu Phe
465                 470                 475                 480
Ile Ala Asn Asn Leu Tyr Lys Asn Gly Arg Leu Leu Arg Arg Trp Arg
                485                 490                 495
Gln Gly Glu Ser Lys Tyr Ser Ala Gly Leu Glu Asp Tyr Ala Ala Met
            500                 505                 510
Ile Met Gly Ala Leu Ala Leu Phe Glu Ile Gly Ser Gly Ala Lys Trp
        515                 520                 525
Leu Val Leu Ala Glu Glu Leu Ala Lys Glu Val Leu Val Ser Phe Arg
    530                 535                 540
Ala Asp Thr Gly Gly Phe Tyr Ser Thr Asp Gly Arg Asp Ser Ser Leu
545                 550                 555                 560
Leu Ile Lys Lys Ala Cys Phe Val Asp Gly Asp Ala Ile Ser Ser Asn
                565                 570                 575
Ala Leu Leu Cys Gln Gly Leu Leu Lys Leu His Ile Ile Ser Gly Lys
            580                 585                 590
Arg His Tyr Leu Thr Phe Ala Glu Asp Ile Leu Gln Cys Val Gln Gly
        595                 600                 605
Lys Trp Ala Lys His Lys Phe Ser Ser Leu Gly Ser Leu Leu Ala Ala
    610                 615                 620
Gln Glu Tyr Phe Phe Gln Thr Thr Ser Glu Asp Phe Tyr Phe Phe Arg
625                 630                 635                 640
Glu
```

<210>72
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<213>Chlamydia trachomatis
<400>72

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Leu Leu Pro Arg Thr Arg Val Gly Ser Phe Leu Glu Tyr Lys Leu Leu
  1               5                  10                  15
Cys Leu Gly Val Cys His Ile Ser Arg Glu Ala Val Arg Ser Lys Glu
             20                  25                  30
Lys Gly Glu Glu Glu Gln Pro Lys Ile Leu Lys Val Phe Leu Pro Lys
         35                  40                  45
Asn Tyr Lys Ser Arg Met Arg Val Val Lys Arg Ala Val Ile Ala Cys
     50                  55                  60
Tyr Leu Gly Ile Thr Ile Phe Ser Gly Ile Ala Phe Gly Tyr Glu Gly
 65                  70                  75                  80
Ala Phe Ser Ser Gly Ser Phe Glu Gln Asn Pro Ser Gly Val Ala Ile
                85                  90                  95
His Asn Arg Val Leu Phe Lys Val Asp Glu Asp Thr Val Val Thr Thr
            100                 105                 110
Leu Asp Val Ile Arg Lys Leu Asn Ile Leu Phe Tyr Ser Thr Cys Pro
        115                 120                 125
Gln Leu Val Asp Ser Val Ser Ala Arg Ser Gln Tyr Tyr Ser Ala Met
    130                 135                 140
Trp Pro Val Val Leu Glu Thr Val Ile Asn Glu Phe Leu Met Ala Ala
145                 150                 155                 160
Asp Ala Lys Ala Lys Lys Ile Phe Ile Asp Pro Thr Ser Val Asn Gln
                165                 170                 175
Glu Ile Glu Ala Met Phe Gly Arg Asp Leu Ser Pro Phe Ala Lys Phe
            180                 185                 190
Phe Asp Met Thr Pro Glu Asp Val Phe Asn Val Val His Arg Ile Leu
        195                 200                 205
Val Ala Gln Arg Val Glu Gly Met Met Val Arg Ser Arg Val Met Leu
    210                 215                 220
Lys Val Thr Pro Gly Met Val Arg Glu Tyr Tyr Gln Lys Leu Ala Asp
225                 230                 235                 240
Glu Ala Ala Gln Ile Thr Gln Trp Thr Tyr Arg Val Leu Thr Ile Lys
```

```
                245                 250                 255
Ala Gly Leu Glu Phe Leu Ala His Lys Ile Ala Gly Lys Val Gln Glu
            260                 265                 270
Arg Leu Asn Glu Gly Ser Ser Trp Asp Lys Glu Arg Leu Thr Ala Leu
        275                 280                 285
Val Leu Ser Gln Gly Gly Gln Leu Met Cys Ser Glu Glu Phe Phe Arg
    290                 295                 300
Glu Asp Ala Gln Leu Ser Val Ala His Arg Gln Ser Leu Glu Glu Ile
305                 310                 315                 320
Asn Phe Pro Glu Glu Arg Cys Gly Lys Val Leu Glu His Ala Ser Gly
                325                 330                 335
Leu Lys Leu Phe Val Leu Phe Asn Arg Ala Thr Lys Thr Leu Asp Pro
            340                 345                 350
Leu Asp Lys Met Glu Ala Gln Leu Lys Gln Gln Leu Met Met Glu Phe
        355                 360                 365
Ala Ala Glu Glu Glu Ala Asn Tyr Lys Asn Lys Leu His Ala Arg Tyr
    370                 375                 380
Gly Phe Asp Pro Ala Thr Ile Thr Lys Leu Leu Ala Glu Asp Ala Pro
385                 390                 395                 400
Gln Leu Phe Ser Leu Leu
                405
```

<210>73
<211>119
<212>PRT
<213>Chlamydia trachomatis

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<400>73
Lys Arg Arg Gly Arg Val Ala Arg Ser Ser Ile Glu Gln Leu Thr Ser
  1               5                  10                  15
Phe Leu Arg Ser Val Asn Gly Arg Ala Lys Lys Ala Leu Ser Gln Asn
             20                  25                  30
Phe Leu Val Asp Gly Asn Ile Leu Arg Lys Ile Leu Thr Thr Ala Glu
         35                  40                  45
Val Gln Pro Gly Asp Trp Val Leu Glu Ile Gly Pro Gly Phe Gly Ala
     50                  55                  60
Leu Ser Glu Val Leu Leu Ser Gln Gly Ala Asn Val Ile Ala Leu Glu
 65                  70                  75                  80
Lys Asp Pro Met Phe Glu Glu Ser Leu Ser Gln Leu Pro Met Asp Ile
                 85                  90                  95
Glu Ile Thr Asp Ala Cys Lys Tyr Pro Leu Thr Ser Leu Glu Asp Lys
            100                 105                 110
Val Gly Lys Gly Lys Asp Val
        115
```

<210>74
<211>170
<212>PRT
<213>Chlamydia trachomatis

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<400>74
Gly Trp Lys Gly Lys Gly Arg Ile Val Ala Asn Leu Pro Tyr His Ile
  1               5                  10                  15
Thr Thr Pro Leu Leu Thr Lys Phe Phe Leu Glu Cys Pro Tyr Arg Trp
             20                  25                  30
Lys Thr Val Thr Val Met Ile Gln Asp Glu Val Ala Arg Arg Ile Thr
         35                  40                  45
Ala Lys Pro Gly Asp Lys Asp Tyr Gly Ser Leu Thr Val Phe Leu Ser
     50                  55                  60
Phe Phe Ala Asp Val Gln Tyr Ala Phe Lys Val Ser Pro Asn Cys Phe
 65                  70                  75                  80
Tyr Pro Lys Pro Ser Val His Ser Ala Val Val His Met Arg Val His
                 85                  90                  95
Glu Gln Phe Ala Leu Ala Asp Ser Glu Ile Glu Glu Phe Phe Thr Leu
            100                 105                 110
```

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```
Thr Arg Ala Ala Phe Gly Gln Arg Arg Lys Leu Leu Ala Asn Ser Leu
        115                 120                 125
Lys Asn Leu Tyr Pro Lys Asp Lys Val Leu Gln Val Leu Glu Gln Leu
    130                 135                 140
Gly Phe Ser Glu Lys Thr Arg Pro Glu Thr Ile Phe Leu Glu Glu Tyr
145                 150                 155                 160
Leu Lys Ile Phe His Leu Leu Lys Asp Ile
                165                 170
<210>75
<211>166
<212>PRT
<213>Chlamydia trachomatis
<400>75
Arg Pro Ile Phe Leu Arg Leu Cys Ile Gly Ile Cys Gly Ile Met Ile
  1               5                  10                  15
Arg Asp Leu Glu Tyr Tyr Asp Ser Pro Ile Leu Arg Lys Val Ala Ala
             20                  25                  30
Pro Val Thr Glu Ile Thr Asp Glu Leu Arg Gln Leu Val Leu Asp Met
         35                  40                  45
Ser Glu Thr Met Ala Phe Tyr Lys Gly Val Gly Leu Ala Ala Pro Gln
     50                  55                  60
Val Gly Gln Ser Ile Ser Leu Phe Ile Met Gly Val Glu Arg Glu Leu
 65                  70                  75                  80
Glu Asp Gly Glu Leu Val Phe Cys Asp Phe Pro Arg Val Phe Ile Asn
                85                  90                  95
Pro Val Ile Thr Gln Lys Ser Glu Gln Leu Val Tyr Gly Asn Glu Gly
            100                 105                 110
Cys Leu Ser Ile Pro Gly Leu Arg Gly Glu Val Ala Arg Pro Asp Lys
        115                 120                 125
Ile Thr Val Ser Ala Lys Asn Leu Asp Gly Gln Gln Phe Ser Leu Ala
    130                 135                 140
Leu Glu Gly Phe Leu Ala Arg Ile Val Met His Glu Thr Asp His Leu
145                 150                 155                 160
Pro Trp Arg Leu Val Tyr
                165
<210>76
<211>102
<212>PRT
<213>Chlamydia trachomatis
<400>76
Val Val Ala Leu Phe Tyr Ile Phe Leu Phe Leu Phe Leu Leu Leu Cys
  1               5                  10                  15
Leu Ile Leu Cys Gly Leu Val Leu Val Gln Glu Ser Lys Ser Thr Gly
             20                  25                  30
Leu Gly Ser Ser Phe Gly Val Asp Ser Gly Asp Ser Val Phe Gly Val
         35                  40                  45
Ser Thr Pro Glu Ile Leu Lys Lys Val Thr Ala Trp Leu Ala Gly Ala
     50                  55                  60
Phe Cys Leu Gly Cys Leu Ile Leu Ser Phe Ala Thr Ser Tyr Leu Gly
 65                  70                  75                  80
Lys Gly Glu Asn Arg Glu Pro Leu Pro Gln Gln Tyr Val Glu Asp Leu
                85                  90                  95
Ile Gln Asp Val Glu Glu
            100
<210>77
<211>702
<212>PRT
<213>Chlamydia trachomatis
<400>77
Ser Gly Val Lys Arg Phe Phe Pro Leu Phe Ile Gly Val Leu Leu Ala
  1               5                  10                  15
```

```
His Thr Leu Pro Ser Glu Gly Leu Ser His Gln Gln Ala Val Gln Lys
                20                  25                  30
Lys Ile Ser Tyr Leu Ser His Phe Lys Gly Ile Thr Gly Ile Met Asp
            35                  40                  45
Val Glu Asp Gly Val Leu His Ile His Asp Asp Leu Arg Leu Gln Ala
        50                  55                  60
Asn Lys Ala Tyr Val Glu Asn Arg Thr Asp Cys Gly Ile Lys Ile Val
65                  70                  75                  80
Ala His Gly Asn Val Met Val Asn Tyr Arg Gly Lys Ile Leu Ile Cys
                85                  90                  95
Asp Tyr Leu Glu Tyr Tyr Glu Asp Thr Asp Ser Cys Leu Leu Thr Asn
            100                 105                 110
Gly Arg Cys Ser Leu Tyr Pro Trp Phe Ile Gly Gly Ser Thr Ile Thr
        115                 120                 125
Ile Ser Pro Ser Ser Ile Ile Ile His Lys Gly Tyr Ile Ser Thr Ser
    130                 135                 140
Glu Gly Pro Gln Lys His Ile Cys Leu Ser Gly Asp Tyr Leu Lys Tyr
145                 150                 155                 160
Ser Ser Asp Ser Val Leu Ser Met Gly Pro Ser Arg Leu Ser Ile Cys
                165                 170                 175
Asn Thr Pro Val Leu Leu Leu Pro Gln Ile Ser Ile Met Pro Met Glu
            180                 185                 190
Ile Pro Lys Pro Pro Ile Thr Phe Arg Gly Gly Ser Gly Gly Phe Leu
        195                 200                 205
Gly Ser Tyr Leu Gly Val Ser Tyr Ser Pro Ile Ser Lys Lys His Cys
    210                 215                 220
Ser Thr Thr Leu Phe Leu Asp Ser Phe Phe Lys His Gly Ile Gly Leu
225                 230                 235                 240
Gly Tyr Asn Met Arg Phe Ser Ser Gln Glu Asn Pro Ser Asn Ala Ile
                245                 250                 255
Asn Ile Lys Ser Tyr Tyr Ala His Arg Leu Ala Ile Asp Ser Ser Gly
            260                 265                 270
Ala Lys Asp Arg Tyr Arg Leu His Gly Asp Phe Thr Phe Ser Lys Glu
        275                 280                 285
Arg Ala His Leu Ala Gly Glu Phe His Leu Ser Asp Ser Trp Glu Thr
    290                 295                 300
Val Ala Asp Ile Phe Pro Asn Asn Phe Ser Leu Lys Asn Thr Gly Pro
305                 310                 315                 320
Thr Glu Val Ser Leu Ser Trp Arg Asp Asn Asn Leu Phe Gly Lys Met
                325                 330                 335
Thr Ser Ser Val Lys Val Asn Ser Phe Gln Asn Val Lys Gln Glu Leu
            340                 345                 350
Pro Gln Ala Ile Leu His His Arg Pro Val Arg Ile Arg Arg Ser Arg
        355                 360                 365
Ile Phe Leu Glu Asn Arg Leu Glu Ala Gly Phe Leu Asp Phe His Phe
    370                 375                 380
Ser Ser Asn Ile Pro Gly Ser Asn Phe Ser Ser Trp Arg Phe Ser Ser
385                 390                 395                 400
Ala His Lys Val Tyr Cys Gly Leu Val Leu Pro Ile Gly Thr Leu Thr
                405                 410                 415
Pro Ser Leu Ser Gly Thr Ala Ile Tyr Tyr Thr Arg Met Leu Ser Pro
            420                 425                 430
Asn Ala Ala His Cys Gln Leu Ser Gly Ser Leu Ser Phe Asp Tyr Arg
        435                 440                 445
Val Ala Leu Gln Lys Glu Tyr Arg His Ala Arg His Ile Val Glu Pro
    450                 455                 460
Phe Cys Ser Phe Leu Lys Thr Thr Arg Pro Val Leu Ser Ser Asp Glu
465                 470                 475                 480
Pro His Ile Phe Ser Ile Lys Asp Ala Phe His Ser Ile Asn Leu Leu
                485                 490                 495
His Val Gly Leu Glu Ser Lys Val Leu Asn Lys His Ser Thr Leu Ser
```

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```
            500                 505                 510
Thr Pro Ser His Leu Lys Leu Trp Thr Thr Tyr Ile Phe Asp Glu Pro
        515                 520                 525
His Ala Lys Asp Thr Phe Pro Lys Thr Ala Cys Trp Phe Ser Leu Pro
    530                 535                 540
Leu Thr Leu Gln Asn Thr Leu Ser Leu Asp Ala Glu Trp Ile Trp Lys
545                 550                 555                 560
Lys Ser Arg Trp Asp His Leu Asn Val Ile Trp Glu Trp Ile Leu Asn
                565                 570                 575
Asp Asn Leu Gly Leu Thr Leu Glu Phe Leu His Arg Ser Lys Tyr Gly
            580                 585                 590
Phe Ile Lys Cys Ala Lys Asp Asn Tyr Thr Leu Asp Val Ser Arg Ser
        595                 600                 605
Leu Asp Thr Leu Leu Ala Ser Pro Leu Ser Asp Arg Arg Asn Leu Ile
    610                 615                 620
Thr Gly Lys Leu Phe Val Arg Pro His Pro His Trp Asn Tyr Asn Leu
625                 630                 635                 640
Asn Leu Arg Tyr Gly Trp His Arg Pro Asp Ser Pro Ser Tyr Leu Glu
                645                 650                 655
Tyr Gln Met Ile Leu Gly His Lys Ile Phe Glu His Trp Gln Leu Phe
            660                 665                 670
Ser Val Tyr Glu Lys Arg Glu Ala Asp Lys Arg Cys Phe Phe Tyr Leu
        675                 680                 685
Lys Leu Asp Lys Arg Lys Gln Lys His Arg His Pro Phe Gly
    690                 695                 700
<210>78
<211>468
<212>PRT
<213>Chlamydia trachomatis
<400>78
His Gln Leu Met Gly Leu Ser Arg Leu Ala Phe Ile Gly Phe Leu Ser
  1               5                  10                  15
Phe Thr Leu Ser Ala Ser Cys Asp Phe Pro Ser Ser Val Ser Gln Arg
             20                  25                  30
Ile Leu Phe Ser Cys Gln Lys Ser Val Pro Gln Ala Leu Glu Ala Tyr
         35                  40                  45
Leu Glu Ala Ser Val Thr Tyr Gln Gln His Asp Phe Ser Val Leu Arg
     50                  55                  60
Val Ile Ala Glu Ser Tyr Leu Gln Gln Ser Phe Leu Ser Glu Asp Thr
 65                  70                  75                  80
His Ile Arg Lys Ser Ala Ile Ile Gly Ala Gly Leu Ser Gly Ser Ser
                 85                  90                  95
Glu Ala Leu Glu Leu Leu Ser Glu Ala Ile Glu Thr Gln Asp Leu Tyr
            100                 105                 110
Glu Gln Leu Leu Ile Leu Asn Ala Ala Thr Ser Gln Leu Ser Lys Thr
        115                 120                 125
Ser Asp Lys Leu Leu Phe Lys Gly Leu Thr Ala Ser His Pro Val Ile
    130                 135                 140
Arg Leu Glu Ala Ala Tyr Arg Leu Ala Cys Met Lys Asn Ser Lys Val
145                 150                 155                 160
Ser Asp Tyr Leu Tyr Ser Phe Ile Tyr Lys Leu Pro Glu Glu Ile Gln
                165                 170                 175
Asn Leu Ala Ala Thr Ile Phe Leu Gln Leu Glu Thr Glu Glu Ala Asp
            180                 185                 190
Ala Tyr Ile His Arg Leu Leu Ser Ser Pro Asn Asn Leu Thr Arg Asn
        195                 200                 205
Tyr Val Ala Tyr Leu Ile Gly Glu Tyr Lys Gln Lys Arg Phe Leu Pro
    210                 215                 220
Thr Leu Arg Ser Leu Leu Thr Ser Ala Ser Pro Leu Asp Gln Glu Gly
225                 230                 235                 240
Ala Leu Tyr Ala Leu Gly Lys Leu Glu Asp Ser Gly Ser Tyr Pro Arg
```

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```
                245                 250                 255
Ile Lys Ala Leu Ser Ser Arg Ser Asn Pro Glu Val Val Leu Ala Ala
            260                 265                 270
Ala Gln Thr Leu Leu Phe Leu Glu Lys Glu Glu Glu Ala Leu Pro Ile
        275                 280                 285
Leu Thr Asn Leu Cys Gln Gln Lys Leu Leu Arg Ala Leu Tyr Thr Ala
    290                 295                 300
Arg Phe Leu Ser Gln Glu Lys Gly Glu Glu Leu Leu Leu Pro Ile Phe
305                 310                 315                 320
Tyr Asn Ala Thr Gln Glu Glu Ile Arg Leu Asn Thr Ala Leu Ala Leu
                325                 330                 335
Val His Gln Gly Cys Thr Asp Pro Gln Val Leu His Tyr Leu Thr Glu
            340                 345                 350
Ile Leu Glu Ser Lys Val Leu His Arg Ile Phe Leu Pro Thr His Ser
        355                 360                 365
Thr Gly Lys Ala Ile Gln Phe Trp Lys Glu Cys Thr Thr Phe Pro Leu
    370                 375                 380
Met Ser Gln Glu Asp Lys Met Arg Thr Leu Ala Met Tyr Arg Val Ala
385                 390                 395                 400
Glu Asp Thr Ile Leu Ser Ala Leu Leu Lys Leu Pro Asn Asp Ala Tyr
                405                 410                 415
Leu Pro Tyr Leu Glu Arg Ile Leu Ala Ser Gln Lys Thr Ile Leu Ala
            420                 425                 430
Ala Lys Ala Ile Ala Phe Leu Ser Val Thr Ala His Pro Gln Ala Leu
        435                 440                 445
Ser Leu Val Ser Lys Ala Ala Leu Thr Pro Gly Asp Pro Ile Ile Xaa
    450                 455                 460
Xaa Thr Leu Ile
465
<210>79
<211>196
<212>PRT
<213>Chlamydia trachomatis
<400>79
Val Glu Ala Arg Leu Val Leu Gly Ser Ser Ser Glu Arg Arg Lys Ala
  1                 5                  10                  15
Val Leu Glu Ser Phe Arg Ile Pro Phe Ile Cys Val Ser Pro Asp Phe
             20                  25                  30
Asp Glu Arg Ser Ile Val Tyr Ser Gly Asp Pro Phe Lys Tyr Thr Lys
         35                  40                  45
Glu Leu Ala Trp Asn Lys Ala Asn Val Val Arg Ser Gln Gly Phe Ser
     50                  55                  60
Asp Ala Leu Ile Ile Thr Ala Asp Thr Val Val Val Tyr Lys Gly Glu
 65                  70                  75                  80
Val Phe Asn Lys Pro Glu Ser Glu Glu His Ala Val Glu Met Leu Arg
                 85                  90                  95
Thr Leu Ser Gly Ser Ser His Ser Val Ile Thr Thr Leu Val Leu Met
            100                 105                 110
Gln Asn Glu Lys Val Leu Ser Ala Ser Glu Asn Thr Gln Val Ser Phe
        115                 120                 125
Ile Asp Ile Pro Pro Gln His Leu Lys Thr Tyr Val Arg Ser Phe Ser
    130                 135                 140
Ser Leu Lys Arg Cys Gly Gly Tyr Cys Val Gln Asp Gly Gly Gly Leu
145                 150                 155                 160
Ile Ile Lys Gln Ile Glu Gly Cys Val Tyr Asn Ile Gln Gly Leu Pro
                165                 170                 175
Ile Lys Thr Leu Asn Gln Leu Leu Met Glu Phe Asn Ile Ser Leu Trp
            180                 185                 190
Asp Tyr Leu Val
        195
<210>80
```

<211>541
<212>PRT
<213>Chlamydia trachomatis
<400>80

```
Leu Tyr Ser Lys Lys Val Phe Val Ile Leu Leu Ser Met Ser Ile Val
  1               5                  10                  15
Leu Asp Lys Ile Gly Lys Thr Leu Gly Thr Arg Val Leu Phe Asp Asp
             20                  25                  30
Val Ser Val Val Phe Asn Pro Gly Asn Arg Tyr Gly Leu Thr Gly Pro
         35                  40                  45
Asn Gly Ala Gly Lys Ser Thr Leu Leu Lys Ile Ile Thr Gly Leu Val
     50                  55                  60
Glu Pro Ser Arg Gly Thr Ile Ser Leu Pro Lys Lys Ile Gly Ile Leu
 65                  70                  75                  80
Arg Gln Asn Ile Asp Ser Phe Gly Asp Val Ile Val Leu Asp Cys Val
                 85                  90                  95
Ile Met Gly Asn Ser Arg Leu Trp Glu Ala Met Gln Arg Arg Asp Ala
            100                 105                 110
Leu Tyr Ala Glu Glu Phe Thr Asp Ala Ile Gly Met Glu Leu Gly Glu
        115                 120                 125
Ile Glu Glu Ile Ile Gly Glu Glu Asp Gly Tyr Arg Ala Glu Ser Glu
    130                 135                 140
Ala Glu Glu Leu Leu Leu Gly Ile Gly Ile Pro Glu Glu Phe Phe Ser
145                 150                 155                 160
Gln Lys Met Ala Thr Ile Pro Leu Asp Leu Gln Phe Arg Val Leu Leu
                165                 170                 175
Cys Gln Ala Leu Phe Gly His Pro Glu Ala Leu Leu Leu Asp Glu Pro
            180                 185                 190
Thr Asn His Leu Asp Leu His Ser Ile Asn Trp Leu Gly Ser Phe Leu
        195                 200                 205
Lys Asp Tyr Asn Gly Thr Val Ile Val Val Ser His Asp Arg His Phe
    210                 215                 220
Leu Asn Thr Ile Thr Thr His Ile Ala Asp Ile Asp Tyr Asp Thr Ile
225                 230                 235                 240
Ile Ile Tyr Pro Gly Asn Tyr Asp Ala Met Val Glu Met Lys Thr Ala
                245                 250                 255
Ser Arg Glu Gln Glu Lys Ala Asp Ile Lys Ser Lys Glu Lys Lys Ile
            260                 265                 270
Ala Gln Leu Arg Glu Phe Val Ala Lys Phe Gly Ala Gly Ser Arg Ala
        275                 280                 285
Ser Gln Val Gln Ser Arg Leu Arg Glu Ile Lys Lys Leu Gln Pro Gln
    290                 295                 300
Glu Leu Lys Lys Ser Asn Ile Gln Arg Pro Tyr Ile Arg Phe Pro Val
305                 310                 315                 320
Ser Asp Lys Thr Ser Gly Lys Val Val Phe Ser Ile Glu Gly Ile Ser
                325                 330                 335
Lys Thr Tyr Asp Ala Asp Pro Leu Leu Phe Asn Pro Phe Ser Leu Glu
            340                 345                 350
Ile Tyr Gln Gly Asp Lys Ile Gly Val Ile Gly Asn Asn Gly Leu Gly
        355                 360                 365
Lys Thr Thr Leu Met Lys Leu Leu Ala Gly Val Glu Gln Pro Ser Gln
    370                 375                 380
Gly Gln Val Lys Leu Gly His Asn Val Ala Phe Ser Tyr Phe Pro Gln
385                 390                 395                 400
Asn His Ala Asp Ile Leu Lys Asp Cys Gly Glu Glu Thr Leu Phe Glu
                405                 410                 415
Trp Leu Arg Arg Arg Lys Thr Gly Ile Thr Asp Gln Glu Val Arg Ser
            420                 425                 430
Val Leu Gly Lys Met Leu Phe Gly Gly Asp Asp Ala Phe Lys Gln Val
        435                 440                 445
Lys Ala Leu Ser Gly Gly Glu Thr Ala Arg Leu Leu Met Ala Gly Met
```

```
    450                 455                 460
Met Leu Glu Asn His Asn Met Leu Ile Leu Asp Glu Ala Asn Asn His
465                 470                 475                 480
Leu Asp Leu Glu Ser Val Ser Ala Leu Ala Trp Ala Ile Asn Asp Tyr
                485                 490                 495
Pro Gly Thr Ala Ile Phe Val Ser His Asp Arg Thr Leu Ile Asp Glu
            500                 505                 510
Cys Ala Thr Lys Leu Leu Ile Phe Asp Lys Gly Thr Ile Ser Phe Phe
        515                 520                 525
Asp Gly Pro Met Ser Glu Tyr Leu Ala Ser Gln Lys Lys
    530                 535                 540
<210>81
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<212>PRT
<213>Chlamydia trachomatis
<400>81
Arg Phe Pro Gly Leu Asn Thr Thr Asp Thr Ser Ser Asn Lys Thr Arg
  1               5                  10                  15
Val Pro Asn Val Leu Pro Ile Leu Ser Arg Thr Ile Leu Met Asp Lys
             20                  25                  30
Arg Ile Thr Lys Thr Phe Leu Glu Tyr Lys Lys Phe Ala Gly Val Val
         35                  40                  45
Thr Pro Leu Ser Cys Glu Gly Glu Phe His Arg Gly Ser Val Phe Leu
     50                  55                  60
Ile Ser Trp Lys His Glu Tyr Lys Trp Leu Ser Ser Gln Glu Lys Tyr
 65                  70                  75                  80
Gly Leu Thr Gly Val Glu Trp Phe Leu Asn Pro Ser Arg Ala Leu Thr
                 85                  90                  95
Ser Glu Trp Gln
            100
<210>82
<211>317
<212>PRT
<213>Chlamydia trachomatis
<400>82
Leu Gly Met Ile Thr Ser Phe Tyr Ala Phe Leu Asp Tyr Leu Lys Asn
  1               5                  10                  15
Met Lys Ala Ser Ser Leu His Thr Leu Arg Asn Tyr Cys Met Asp Leu
             20                  25                  30
Ser Ser Leu Lys Cys Phe Leu Glu Lys Lys Ser Asp Leu Ser Pro Thr
         35                  40                  45
Pro Pro Leu Ser Leu His Asp Asn Thr Tyr Asp Tyr Pro Pro Leu Ser
     50                  55                  60
Phe Ser Leu Phe Thr Lys Asp Asn Ile Arg Leu Tyr Leu Leu Glu Gln
 65                  70                  75                  80
Ile Gln Thr His His Ser Lys Arg Thr Val Arg Arg Arg Leu Ser Ala
                 85                  90                  95
Ile Lys Ser Phe Ala Arg Phe Cys Val Lys Asn Gln Leu Ile Pro Glu
            100                 105                 110
Asn Pro Ala Glu Met Ile Arg Gly Pro Arg Leu Pro Gln Glu Leu Pro
        115                 120                 125
Ser Pro Leu Thr Tyr Glu Gln Val Leu Ala Leu Met Ala Ala Pro Glu
    130                 135                 140
Leu Asp Lys Val Thr Gly Phe Arg Asp Arg Cys Leu Leu Glu Leu Phe
145                 150                 155                 160
Tyr Ser Ser Gly Leu Arg Ile Ser Glu Ile Thr Ala Leu Asn Arg Ala
                165                 170                 175
Asp Ile Asp Phe Gln Ser His Leu Leu His Ile Arg Gly Lys Gly Lys
            180                 185                 190
Lys Glu Arg Ile Val Pro Met Thr Lys Val Ala Val Gln Trp Leu Gln
        195                 200                 205
```

Sequence Listing

```
Asp Tyr Leu Asn His Pro Asp Arg Ala Ser Val Glu Gln Asp His Gln
    210                 215                 220
Ala Cys Phe Leu Asn Arg Phe Gly Lys Arg Leu Ser Thr Arg Ser Ile
225                 230                 235                 240
Asp Arg Lys Phe Gln Gln Tyr Leu Leu Lys Thr Gly Leu Ser Gly Ser
                245                 250                 255
Ile Thr Pro His Thr Ile Arg His Thr Ile Ala Thr His Trp Leu Glu
            260                 265                 270
Arg Gly Met Asp Leu Lys Thr Ile Gln Leu Leu Leu Gly His Thr Ser
        275                 280                 285
Leu Glu Thr Thr Thr Ile Tyr Thr His Val Ser Met Lys Leu Lys Lys
    290                 295                 300
Gln Ile His Asp Glu Thr His Pro His Asn Leu Glu Glu
305                 310                 315
<210>83
<211>304
<212>PRT
<213>Chlamydia trachomatis
<400>83
Met Ser Tyr Arg Gly Leu Thr Ile Leu Gly Cys Ser Ser Gln Gln Pro
  1               5                  10                  15
Thr Arg His Arg Asn His Gly Ala Tyr Leu Leu Arg Trp Asn Gly Glu
             20                  25                  30
Gly Leu Leu Phe Asp Pro Gly Glu Gly Thr Gln Arg Gln Phe Ile Tyr
         35                  40                  45
Ala Asn Ile Ala Pro Thr Val Val Ser Arg Ile Phe Ile Ser His Phe
     50                  55                  60
His Gly Asp His Cys Leu Gly Leu Gly Ser Met Leu Met Arg Leu Asn
 65                  70                  75                  80
Leu Asp Arg Val Ser His Pro Ile His Cys Tyr Tyr Pro Ala Ser Gly
                85                  90                  95
Lys Lys Tyr Phe Asp Arg Leu Arg Tyr Ser Thr Ile Tyr His Glu Thr
            100                 105                 110
Ile Lys Val Ile Glu His Pro Ile Asp Arg Glu Gly Ile Val Glu Asp
        115                 120                 125
Phe Gly Asn Phe Arg Ile Glu Ser Arg Gln Leu Asp His Leu Val Asp
    130                 135                 140
Thr Leu Gly Trp Arg Ile Thr Glu Pro Asp Thr Thr Lys Phe Ile Pro
145                 150                 155                 160
Glu Lys Ile Lys Ala Ala Gly Leu Lys Gly Pro Ile Met Gln Glu Leu
                165                 170                 175
Ile Asn Lys Gly Arg Val Lys Val Asn Asp Thr Ile Val His Leu Asp
            180                 185                 190
Asp Val Ser Tyr Thr Arg Lys Gly Asp Ser Ile Ala Val Val Ala Asp
        195                 200                 205
Ser Leu Pro Cys Gln Ala Ile Val Asp Leu Ala Arg Asn Ala Arg Ile
    210                 215                 220
Leu Leu Cys Glu Ser Thr Tyr Leu Glu Glu His Ser His Leu Ala Lys
225                 230                 235                 240
Ser His Tyr His Met Thr Ala Lys Gln Ala Ala Glu Gln Ala Lys Arg
                245                 250                 255
Ala Glu Val Gln Gln Leu Ile Leu Thr His Phe Ser Ala Arg Tyr Asn
            260                 265                 270
Thr Thr Glu Glu Phe Val Gln Glu Ala Gly Glu Ile Phe Pro Asn Val
        275                 280                 285
Phe Ala Ala Glu Glu Phe Cys Ser Tyr Glu Phe Pro Lys Asn Pro Ser
    290                 295                 300
<210>84
<211>698
<212>PRT
<213>Chlamydia trachomatis
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<400>84

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Ala Gln Val Leu Leu Ser Ile Glu Asp Arg Ile Arg Ile Val Lys Pro
 1               5                  10                  15
Ile Gln Asp Lys Tyr Leu Lys Ala Lys Val Ser Tyr His Lys Glu Asn
            20                  25                  30
Lys Glu Leu Thr Glu Glu Leu Lys Ala Tyr Ser Ile Ser Ile Val Ser
        35                  40                  45
Ile Ile Lys Asp Leu Leu Lys Leu Asn Pro Leu Phe Lys Glu Glu Leu
    50                  55                  60
Gln Ile Phe Leu Gly His Ser Asp Phe Thr Glu Pro Gly Lys Leu Ala
65                  70                  75                  80
Asp Phe Ser Val Ala Leu Thr Thr Ala Thr Arg Glu Glu Leu Gln Glu
                85                  90                  95
Ile Leu Glu Thr Thr Asp Met His Asp Arg Ile Asp Lys Ala Leu Val
            100                 105                 110
Leu Leu Lys Lys Glu Leu Asp Leu Ser Arg Leu Gln Ser Ser Ile Asn
        115                 120                 125
Gln Lys Ile Glu Ala Thr Ile Thr Lys Ser Gln Lys Glu Phe Phe Leu
    130                 135                 140
Lys Glu Gln Leu Lys Thr Ile Lys Lys Glu Leu Gly Leu Glu Lys Asp
145                 150                 155                 160
Asp His Ala Val Asp Leu Glu Lys Phe Met Glu Arg Phe Asn Lys Arg
                165                 170                 175
Asp Val Pro Gln Tyr Ala Met Asp Val Ile Gln Asp Glu Met Asp Lys
            180                 185                 190
Leu Gln Thr Leu Glu Thr Ser Ser Ala Glu Tyr Ala Val Cys Arg Asn
        195                 200                 205
Tyr Leu Asp Trp Leu Thr Ile Val Pro Trp Gly Ile Gln Thr Lys Glu
    210                 215                 220
Tyr His Asp Leu Lys Lys Ala Glu Ser Ile Leu Asn Lys Asp His Tyr
225                 230                 235                 240
Gly Leu Glu Asp Ile Lys Gln Arg Ile Leu Glu Leu Ile Ser Val Gly
                245                 250                 255
Lys Leu Ala Asn Gly Met Lys Gly Ser Ile Ile Cys Leu Val Gly Pro
            260                 265                 270
Pro Gly Val Gly Lys Thr Ser Ile Gly Arg Ser Ile Ala Lys Val Leu
        275                 280                 285
His Arg Lys Phe Phe Arg Phe Ser Val Gly Gly Met Arg Asp Glu Ala
    290                 295                 300
Glu Ile Lys Gly His Arg Arg Thr Tyr Ile Gly Ala Met Pro Gly Lys
305                 310                 315                 320
Leu Val Gln Ala Leu Lys Gln Ser Gln Ile Met Asn Pro Val Ile Met
                325                 330                 335
Ile Asp Glu Val Asp Lys Ile Gly Ser Ser Tyr His Gly Asp Pro Ala
            340                 345                 350
Ser Ala Leu Leu Glu Val Leu Asp Pro Glu Gln Asn Lys Asp Phe Leu
        355                 360                 365
Asp His Tyr Leu Asp Val Arg Val Asp Leu Ser Asn Val Leu Phe Ile
    370                 375                 380
Leu Thr Ala Asn Val Leu Asp Ser Ile Pro Asp Pro Leu Leu Asp Arg
385                 390                 395                 400
Met Glu Val Leu Arg Leu Ser Gly Tyr Ile Leu Glu Glu Lys Leu Gln
                405                 410                 415
Ile Ala Thr Lys Tyr Leu Val Pro Arg Ala Arg Lys Glu Met Gly Leu
            420                 425                 430
Ser Ala Gln Asn Val Thr Phe Gln Pro Glu Ala Ile Lys His Met Ile
        435                 440                 445
Asn Asn Tyr Ala Arg Glu Ala Gly Val Arg Thr Leu Asn Glu Asn Ile
    450                 455                 460
Lys Lys Val Leu Arg Lys Val Ala Leu Lys Ile Val Gln Asn Gln Glu
465                 470                 475                 480
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Lys Asn Pro Ser Lys Lys Ser Arg Phe Thr Ile Thr Pro Lys Asn Leu
485 490 495
Gln Asp Tyr Leu Gly Lys Pro Val Phe Ser Ser Asp Arg Phe Tyr Glu
500 505 510
Lys Thr Pro Val Gly Val Ala Thr Gly Leu Ala Trp Thr Ser Leu Gly
515 520 525
Gly Ala Thr Leu Tyr Ile Glu Ser Val Gln Val Pro Ser Ser Ser Gly
530 535 540
Lys Ala Asp Met His Leu Thr Gly Gln Ala Gly Asp Val Met Lys Glu
545 550 555 560
Ser Ser Gln Ile Ala Trp Thr Tyr Leu His Ser Ala Leu Glu Arg Tyr
565 570 575
Ala Pro Gly Gln Pro Phe Phe Glu Lys Ser Gln Val His Ile His Ile
580 585 590
Pro Glu Gly Ala Thr Pro Lys Asp Gly Pro Ser Ala Gly Ile Thr Met
595 600 605
Val Thr Ser Leu Leu Ser Leu Leu Leu Asp Val Pro Val Leu Asn Asn
610 615 620
Leu Gly Met Thr Gly Glu Leu Thr Leu Thr Gly Arg Val Leu Gly Ile
625 630 635 640
Gly Gly Ile Arg Glu Lys Leu Ile Ala Ala Arg Arg Ser Lys Leu Asn
645 650 655
Ile Leu Ile Phe Pro Glu Asp Asn Arg Arg Asp Tyr Asp Glu Leu Pro
660 665 670
Ala Tyr Leu Lys Lys Gly Leu Lys Val His Phe Val Thr His Tyr Asp
675 680 685
Asp Val Phe Lys Ile Ala Phe Pro Gly Val
690 695
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<213>Chlamydia trachomatis
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Ala Val Tyr Lys Tyr Phe Ile Val Asp Thr Ser Gly Ser Gln Pro Phe
1 5 10 15
Leu Ala Tyr Val Asp Cys Arg Asp Val Leu Glu Val Trp Ser Leu Pro
20 25 30
Thr Gly Pro Asp Gln Gly Val Val Leu Asn Phe Ile Phe Asn Ser Leu
35 40 45
Asp Leu Pro Phe Gln Gly Ile Gly Val Ser Val Gly Pro Gly Gly Phe
50 55 60
Ser Ala Thr Arg Val Gly Val Ala Phe Ala Gln Gly Leu Ser Leu Ala
65 70 75 80
Lys Asn Val Pro Leu Val Gly Tyr Ser Ser Leu Glu Gly Tyr Leu Ser
85 90 95
Leu Gly Gln Glu Glu Glu Ala Leu Leu Leu Pro Leu Gly Lys Lys Gly
100 105 110
Gly Val Val Ala Leu Asn Ser Glu Leu Ser Leu Asp Gly Phe Leu Leu
115 120 125
Thr Asp Thr Thr Ser Thr Pro Gly Ile Leu Leu Ser Tyr Ser Glu Ala
130 135 140
Leu Glu Tyr Cys Leu Asp Lys Gly Cys Cys His Val Ile Ser Pro Asp
145 150 155 160
Pro Thr Tyr Phe Val Glu Leu Phe Ser Ser Arg Ile Ser Val Arg Lys
165 170 175
Val Val Pro Cys Ile Asp Arg Ile Arg Lys Tyr Val Val Ser Gln Phe
180 185 190
Val Leu Ser Gln Asn Leu Pro Leu Cys Leu Asp Tyr Arg Ser Ile Ser
195 200 205
Ser Phe Phe
210

Sheet 6 of 16

<210>86
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<213>Chlamydia trachomatis
<400>86

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Ser Gly Gly Arg Phe Lys Glu Val Ser Glu Ala Tyr Glu Val Leu Gly
  1               5                  10                  15
Asp Ala Gln Lys Arg Glu Ser Tyr Asp Arg Tyr Gly Lys Asp Gly Pro
            20                  25                  30
Phe Ala Gly Ala Gly Gly Phe Gly Gly Ala Gly Met Gly Asn Met Glu
        35                  40                  45
Asp Ala Leu Arg Thr Phe Met Gly Ala Phe Gly Gly Asp Phe Gly Gly
    50                  55                  60
Asn Gly Gly Gly Phe Phe Glu Gly Leu Phe Gly Gly Leu Gly Glu Ala
65                  70                  75                  80
Phe Gly Met Arg Gly Gly Ser Glu Ser Ser Arg Gln Gly Ala Ser Lys
                85                  90                  95
Lys Val His Ile Thr Leu Ser Phe Glu Glu Ala Ala Lys Gly Val Glu
            100                 105                 110
Lys Glu Leu Leu Val Ser Gly Tyr Lys Ser Cys Asp Ala Cys Ser Gly
        115                 120                 125
Ser Gly Ala Asn Thr Ala Lys Gly Val Lys Val Cys Asp Arg Cys Lys
    130                 135                 140
Gly Ser Gly Gln Val Val Gln Ser Arg Gly Phe Phe Ser Met Ala Ser
145                 150                 155                 160
Thr Cys Pro Asp Cys Ser Gly Glu Gly Arg Val Ile Thr Asp Pro Cys
                165                 170                 175
Ser Val Cys Arg Gly Gln Gly Arg Ile Lys Asp Lys Arg Ser Val His
            180                 185                 190
Val Asn Ile Pro Ala Gly Val Asp Ser Gly Met Arg Leu Lys Met Glu
        195                 200                 205
Gly Tyr Gly Asp Ala Gly Gln Asn Gly Ala Pro Ala Gly Asp Leu Tyr
    210                 215                 220
Val Phe Ile Asp Val Glu Pro His Pro Val Phe Glu Arg His Gly Asp
225                 230                 235                 240
Asp Leu Val Leu Glu Leu Pro Ile Gly Phe Val Asp Ala Ala Leu Gly
                245                 250                 255
Ile Lys Lys Glu Ile Pro Thr Leu Leu Lys Glu Gly Thr Cys Arg Leu
            260                 265                 270
Ser Ile Pro Glu Gly Ile Gln Ser Gly Thr Val Leu Lys Val Arg Gly
        275                 280                 285
Gln Gly Phe Pro Asn Val His Gly Lys Ser Arg Gly Asp Leu Leu Val
    290                 295                 300
Arg Val Ser Val Glu Thr Pro Gln His Leu Ser Asn Glu Gln Lys Asp
305                 310                 315                 320
Leu Leu Arg Gln Phe Ala Ala Thr Glu Lys Ala Glu Asn Phe Pro Lys
                325                 330                 335
Lys Arg Ser Phe Leu Asp Lys Ile Lys Gly Phe Phe Ser Asp Phe Ala
            340                 345                 350
Val
```

<210>87
<211>682
<212>PRT
<213>Chlamydia trachomatis
<400>87

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Glu Gly Ala Ala Val Arg His Ser Val Tyr Gln Leu Asp Ser Ala Val
  1               5                  10                  15
Glu Asn Val Phe Arg Leu Ala Trp Thr Leu Arg Phe Ser Glu Arg Lys
            20                  25                  30
Met Leu Leu Leu Ser Arg Gln Ser Gly Ser Gly Gly Ser Phe Gln Leu
```

```
          35                  40                  45
Ser Cys Ala Gly His Glu Leu Ala Gly Val Val Ala Ala Lys Ser Leu
     50                  55                  60
Ile Pro Gly Lys Asp Trp Ala Phe Pro Tyr Tyr Arg Asp Gln Gly Phe
 65                  70                  75                  80
Pro Leu Gly Leu Gly Cys Asp Leu Ser Glu Ile Phe Ala Ser Phe Leu
                 85                  90                  95
Ala Arg Thr Thr Gln Asn His Ser Ala Gly Arg Met Met Pro Tyr His
            100                 105                 110
Tyr Ser His Lys Lys Leu Arg Ile Cys Cys Gln Ser Ser Val Val Gly
        115                 120                 125
Thr Gln Phe Leu Gln Ala Ala Gly Arg Ala Trp Gly Val Lys Asn Ser
    130                 135                 140
Gly Lys Ser Glu Val Val Tyr Val Ser Gly Gly Asp Gly Ser Thr Ser
145                 150                 155                 160
Gln Gly Glu Phe His Glu Met Leu Asn Phe Ala Ser Leu His Gln Leu
                165                 170                 175
Pro Leu Val Ile Ala Ile Gln Asn Asn Gln Trp Ala Ile Ser Val Pro
            180                 185                 190
Phe Ala Asp Gln Cys Gly Ala Asp Leu Val Ala Leu Gly Asn Ser Tyr
        195                 200                 205
Ser Gly Leu Ala Thr Tyr Glu Val Asp Gly Gly Asp Val Ser Val Leu
    210                 215                 220
Thr Gln Thr Phe Glu Arg Ala Val Ser Asp Ala Arg His Arg His Ile
225                 230                 235                 240
Pro Ala Leu Val Ile Val Asn Val Val Arg Leu Glu Ser His Ser Asn
                245                 250                 255
Ser Asp Asn Gln Ala Lys Tyr Arg Ser Glu Glu Asp Leu Ser Cys Cys
            260                 265                 270
Gln Ala Gln Asp Pro Leu Val Arg Leu Glu Lys Ser Leu Leu Asp Asp
        275                 280                 285
Phe Gly Val Ala His Glu Val Ile Glu Gln Ile Lys Ala Glu Leu Gln
    290                 295                 300
Glu Thr Val Asn Gln Ala Cys Glu Leu Ala Glu Ser Ala Pro Phe Pro
305                 310                 315                 320
Cys Lys Gly Ala Thr Lys His Glu Val Phe Ala Pro Tyr Asn Ile Ser
                325                 330                 335
Leu Ile Asp Tyr Glu Asn Ala Leu Glu Thr Ala Ser Leu Gln Lys Leu
            340                 345                 350
Glu Pro Arg Val Met Arg Asp Ala Ile Thr Glu Ala Leu Val Glu Glu
        355                 360                 365
Met Gln Arg Asp Pro Gly Val Val Val Phe Gly Glu Asp Val Ala Gly
    370                 375                 380
Asn Lys Gly Gly Val Phe Gly Val Thr Arg Thr Leu Thr Glu Gln Phe
385                 390                 395                 400
Gly Glu Asn Arg Cys Phe Asn Thr Pro Leu Ala Glu Ala Thr Ile Ile
                405                 410                 415
Gly Ala Ala Val Gly Met Ala Phe Asp Gly Phe Tyr Lys Pro Val Ala
            420                 425                 430
Glu Ile Gln Phe Ala Asp Tyr Ile Trp Pro Gly Ile Asn Gln Leu Phe
        435                 440                 445
Ser Glu Ala Ala Ser Ile Tyr Tyr Arg Ser Ala Gly Glu Trp Glu Met
    450                 455                 460
Pro Ile Val Ile Arg Thr Pro Cys Gly Gly Tyr Ile Gln Gly Gly Pro
465                 470                 475                 480
Tyr His Ser Gln Asn Ile Glu Ala Phe Leu Ala His Cys Pro Gly Leu
                485                 490                 495
Lys Val Val Tyr Pro Ser Asn Ala Ala Asp Ala Lys Ala Leu Leu Lys
            500                 505                 510
Ala Ala Ile Arg Asp Pro Asn Pro Val Val Phe Leu Glu His Lys Ala
        515                 520                 525
```

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Leu Tyr Gln Arg Arg Leu Phe Ser Thr Thr Pro Val Phe Ser Ser Asp
530 535 540
Tyr Val Leu Pro Phe Gly Gln Ala Arg Ile Val His Pro Gly Thr Asp
545 550 555 560
Leu Thr Ile Val Ser Trp Gly Met Ser Leu Val Met Ser Val Glu Val
565 570 575
Ala Arg Asp Leu Leu Glu Leu Gly Ile Ser Val Glu Val Ile Asp Leu
580 585 590
Arg Thr Ile Val Pro Cys Asp Phe Ala Thr Val Cys Glu Ser Val Lys
595 600 605
Lys Thr Gly Lys Leu Leu Val Val His Glu Ala Ser Glu Phe Cys Gly
610 615 620
Phe Gly Ser Glu Leu Val Ala Leu Val Ala Glu Arg Ala Tyr Arg Tyr
625 630 635 640
Leu Asp Ala Pro Ile Lys Arg Ile Gly Ala Leu His Ala Pro Val Pro
645 650 655
Tyr Ser Lys Val Leu Glu Asn Glu Val Leu Pro Gln Lys Glu Lys Ile
660 665 670
Phe Gln Glu Ala Lys Leu Leu Ala Glu Phe
675 680

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<213>Chlamydia trachomatis
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1 5 10 15
Ala Asn Thr Ser Ser Gln Glu Ser Val Leu Arg Ile Cys Ser Arg Glu
20 25 30
Ser Thr Ser Thr Gly Cys Leu Glu Gln Ala Asp Val Thr Leu Ser Leu
35 40 45
Tyr His Cys Ile Pro Asn Leu Ile Thr Ser Pro Ile Cys Leu Arg Ile
50 55 60
Arg Leu Phe Ser Ser Cys Ser Val Phe Gln Lys Gln His Pro Ile Phe
65 70 75 80
Ile Gly Ser Ala Tyr Trp Leu Ala Gly Met Leu Ala His Gln Ala Pro
85 90 95
Ile Cys Cys Ala Leu Leu Ile Val Ala Leu His Pro Phe Ile Pro Lys
100 105 110
Arg Cys Leu Lys Thr Leu Phe Ser Leu Ser Ile Cys Phe Gly Val Pro
115 120 125
Leu Leu Phe Ser Pro Leu Ile Ser Pro Ser Asn Ala Ser Arg Ser Val
130 135 140
Ala Asn Ser Lys Ile Gln Val Thr Lys Gly Ser Ala Ser Gly Tyr Phe
145 150 155 160
Leu Ile Lys Lys Lys Leu Thr His Arg Tyr Ser Gly Thr Ala Leu Ser
165 170 175
Leu Glu Thr Glu Asp Lys Gln Ser Tyr Gln Asn Leu Pro Cys Ser Ile
180 185 190
Ile Ser Thr Ile Pro Leu Ser Glu His Thr Val Tyr His Leu Glu Gly
195 200 205
Cys Val Ser Lys Ser Ser Cys Pro Ile Thr Phe Arg Ser Ser Lys Leu
210 215 220
Ile Asn Thr Pro Thr Gln Ser Ser Ile Phe Leu Arg Asn Ser Ser Asn
225 230 235 240
Tyr Ser Leu Pro Ile Leu Lys Glu Asn Phe Arg Phe Phe Leu His Gln
245 250 255
Arg Ile Leu Asn Leu Phe Ser Asp Lys Asp Ile Gly Arg Phe Ser Ser
260 265 270
Ser Leu Ile Leu Gly Thr Pro Leu Ser Tyr Lys His Lys Glu Leu Phe
275 280 285

Sequence Listing

```
Lys Ser Lys Gly Leu Ser His Leu Phe Ser Val Ser Gly Trp His Phe
    290                 295                 300
Ser Leu Phe Ala Asn Thr Phe Phe Phe Leu Leu Gly Thr Leu Ser Pro
305                 310                 315                 320
Lys Lys Arg Gly Leu Trp Val Leu Phe Leu Leu Ser Leu Leu Asn Phe
                325                 330                 335
Val Phe Pro Thr Ser Pro Ser Val Phe Arg Thr Trp Phe Ser Ser Ile
            340                 345                 350
Leu Phe Cys Leu Ala Pro Phe Ser Ile Gly His Cys Ser Ser Leu Asn
        355                 360                 365
Arg Leu Gly Ile Ser Phe Ile Phe Cys Ser Leu Phe Phe Pro Ile Ser
    370                 375                 380
Ser Pro Ala Leu Ile Leu Ser Phe Leu Ala Thr Leu Gly Ile Leu Phe
385                 390                 395                 400
Ser Leu Tyr Arg Tyr Tyr Val Ser Phe Thr Leu Pro Gly Asn His Tyr
                405                 410                 415
Ser Ala Leu Val Gly Phe Ser Ser Leu Phe Gly Leu Tyr Ser Gln Pro
            420                 425                 430
Tyr Gln Ser Leu Leu Leu Pro Ser Phe Leu Ser Phe Ser Gln
        435                 440                 445
<210>89
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Arg Tyr Lys Glu Asn Lys Met Pro Lys Val Ala Lys Lys Leu Ser Ile
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Ser Ala Gly Asp Asp Ile Gly Lys Lys Ser Glu Gln Lys Ile Lys Leu
            20                  25                  30
Ile Pro Ser Arg Phe Arg Leu Glu Gln Cys Pro Ile Glu Lys Gly Ala
        35                  40                  45
Arg Gln Asn Arg Ile Leu Glu Asn Gln Val Leu Asn Thr Glu Gly Glu
    50                  55                  60
Val Gly Asn Thr Lys Leu Arg Arg Glu Ser Arg Lys Arg Thr Gln Arg
65                  70                  75                  80
Pro Arg Phe Leu Gly Glu Ser Val Pro Asn Lys Lys Lys Lys Val Leu
                85                  90                  95
Ala Asn Ser Glu Lys Cys His Pro Asp Thr Glu Lys Arg Trp Asp Asn
            100                 105                 110
Pro Leu Leu Leu Asn Ser Ser Leu Cys Leu
        115                 120
<210>90
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<212>PRT
<213>Chlamydia trachomatis
<400>90
Ala Leu Pro Met Lys Ile Gly Cys Cys Phe Trp Lys Thr Glu Gln Glu
  1               5                  10                  15
Leu Asn Ser Leu Ile Arg Lys Gln Ile Gly Asp Val Met Arg Leu Gly
            20                  25                  30
Met Gln Trp Tyr Lys Asp Ser Val Thr Ser Ala Cys Ser Lys Gln Pro
        35                  40                  45
Val Glu Val Leu Ser Leu Glu Gln Met Arg Arg Thr Leu Ser Trp Glu
    50                  55                  60
Glu Val Phe Ala Lys Val Pro Arg Leu Pro Arg Gly Trp Phe Glu Leu
65                  70                  75                  80
Val Gly Leu Ser Gln Ala Asp Arg Ile Glu Leu Phe Arg Asp Phe Trp
                85                  90                  95
Phe Ser Ala Leu Gly Val Glu Asn Thr Asp Phe Pro Gly Ile Cys His
            100                 105                 110
Phe Phe Pro Leu
```

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115

<210>91
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<212>PRT
<213>Chlamydia trachomatis
<400>91

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Phe Pro Trp Tyr Leu Ser Phe Phe Ser Ser Leu Ser His Leu Asp Val
 1               5                  10                  15
Arg Ile Thr Arg Asn Ser Leu Ser Ala Pro Tyr Asp Val Gln Met Val
            20                  25                  30
Tyr Ser Tyr Lys Gly Ile Val Tyr Leu Gly Ala Pro Pro Phe Glu Thr
        35                  40                  45
Val Gly Val Val Phe Pro Lys Leu Gly Asp Glu Thr Tyr Arg His Phe
    50                  55                  60
Phe Ser Ile His Asn Gly Phe Ser Arg Glu Gly Glu Ile Gly Ile Phe
65                  70                  75                  80
Pro Tyr Arg Tyr Leu Ala Gln Ala Gln Tyr Leu Leu Arg Glu Asp Leu
                85                  90                  95
Leu Ser Arg Gly Lys Ile Ser Leu Glu Asp Asn Cys Ser Ser Leu Gly
            100                 105                 110
Ile Phe Pro Phe Tyr Ala Gln Tyr Asp Ile Ala Asp Ser Arg Cys Phe
        115                 120                 125
Ile Ile Asp Ala Lys Ile Arg Gln Tyr Phe Pro Ser Tyr Asn Val Arg
    130                 135                 140
Leu Asp Asn Gln Ser Leu Phe Pro His Gly Lys Ile Ala Ile Ser Glu
145                 150                 155                 160
Met Leu Ser Asp Ser His Tyr His Thr Phe Leu Leu Trp Leu Glu Gln
                165                 170                 175
Tyr Leu Leu Ser Gln Lys Pro
            180
```

<210>92
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<212>PRT
<213>Chlamydia trachomatis
<400>92

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Leu Asp Leu Ala Tyr His His Phe Val Phe Thr Arg Thr Gly Lys Asn
 1               5                  10                  15
Thr Met Ser Gly Gly Asn Asp Ser Val Leu His Arg Pro Val Glu Ala
            20                  25                  30
Pro Leu Met Glu Asp Gly Glu Leu Ser Ala Val Phe Thr Ile Arg Asn
        35                  40                  45
Pro Ser Gly Ile His Val Arg Pro Ala Gly Thr Ile Val Lys Leu Phe
    50                  55                  60
Glu Gly Glu Glu Cys Glu Ala Thr Leu Thr Tyr Leu Gly Lys Thr Val
65                  70                  75                  80
Asn Ala Arg Ser Val Met Ser Ile Leu Met Leu Gly Ala Ser Tyr Asn
                85                  90                  95
Gly Glu Val Ala Val His Ile Lys Gly Pro Ser Ala Ser Arg Val Met
            100                 105                 110
Gln Lys Leu Ser Glu Val Phe Asn Ser Gly Phe Gly Glu Leu
        115                 120                 125
```

<210>93
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<213>Chlamydia trachomatis
<400>93

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Met Ser Val Thr Gly Gln Asp Asn Lys Glu Leu Gln Gln Glu Phe Val
 1               5                  10                  15
Ile Val Gly Glu Pro Ile Val Pro Gly Ile Gly Leu Gly Lys Ala Leu
            20                  25                  30
Leu Leu Gly Lys Ser Ser Leu Arg Ile Arg Glu Leu Thr Leu Pro Gln
```

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```
          35                  40                  45
Glu Glu Val Glu His Glu Ile Ser Arg Tyr Tyr Lys Ala Leu Lys Arg
     50                  55                  60
Ser Arg Ser Asp Leu Ala Ala Leu Glu Lys Glu Ala Lys Gly Lys Gln
 65                  70                  75                  80
Gly Tyr Gln Glu Ile Ala Ser Ile Leu Gln Ala His Leu Glu Ile Ile
                 85                  90                  95
Lys Asp Pro Leu Leu Thr Glu Glu Val Val Lys Thr Ile Arg Lys Asp
            100                 105                 110
Arg Lys Asn Ala Glu Phe Val Phe Ser Ser Val Met Gly Glu Ile Glu
        115                 120                 125
Lys Ser Leu Cys Ala Val Gln Lys Thr Thr Ala Thr Thr Val Asp Arg
    130                 135                 140
Val Gln Asp Ile His Asp Ile Ser Asn Arg Val Ile Gly His Leu Cys
145                 150                 155                 160
Cys Gln His Lys Ser Ser Leu Gly Glu Phe Asp Gln Asn Leu Ile Val
                165                 170                 175
Phe Ser Glu Glu Leu Thr Pro Ser Glu Ala Ala Asn Ala Asn Pro Glu
            180                 185                 190
Tyr Ile Arg Gly Phe Val Ser Leu Glu Gly Ala Lys Thr Ser His Thr
        195                 200                 205
Ala Ile Val Ser Leu Ala Lys Asn Ile Pro Tyr Val Ala Asn Phe Thr
    210                 215                 220
Thr Glu Leu Trp Asp Thr Ile Asn Glu Phe Ser Gly Thr Leu Val Leu
225                 230                 235                 240
Ile Asn Gly Asp Lys Gly Glu Ile Thr Phe Asn Pro Gln Leu Ser Thr
                245                 250                 255
Ile Gln Thr Tyr Tyr Arg Lys Gln Ala Ser Val Ser Val Thr Val Pro
            260                 265                 270
Val Gln Val Gln Thr Gly Lys Asn Leu Pro Leu Ile Ser Leu Ser Ala
        275                 280                 285
Gln Ile Val Ser Thr Glu Glu Leu Pro Met Ile Glu Arg Glu Ser Pro
    290                 295                 300
Gly Thr Ser Val Gly Leu Phe Arg Ser Glu Phe Met Ala Phe Ser Leu
305                 310                 315                 320
Gly Arg Leu Pro Cys Val Glu Glu Gln Ala Asp Gln Tyr Ala Gln Leu
                325                 330                 335
Val Gln Phe Gln Cys Ser Asp Ile His Val Leu Arg Leu Phe Asp Phe
            340                 345                 350
Gly Glu Asp Lys Glu Cys Pro Cys Ile Ser Ser Ser His Arg Ser Val
        355                 360                 365
Arg Trp Leu Leu Glu Gln Glu Lys Val Leu Lys Glu Gln Leu Gln Ala
    370                 375                 380
Ile Ala Ile Val Ser Arg Ile Gly Arg Leu Lys Val Leu Ile Pro Gly
385                 390                 395                 400
Val Ile Asp Ala Ser Glu Ile Ala Leu Val Lys Arg Leu Phe Gln Glu
                405                 410                 415
Glu Ile Arg Leu Leu Lys Gly Ile Ser Glu Asn Ile Leu Trp Gly Ser
            420                 425                 430
Met Ile Glu Ile Pro Ser Ala Val Trp Met Ile Glu Glu Ile Leu Gln
        435                 440                 445
Glu Ser Ser Phe Val Ala Leu Gly Thr Asn Asp Leu Ala Gln Tyr Thr
    450                 455                 460
Leu Gly Thr Ser Arg Glu Arg Ser Leu Leu Gly Glu Arg Ser Arg Val
465                 470                 475                 480
Pro His Pro Ser Val Ile Arg Met Ile His His Val Val Glu Gln Ala
                485                 490                 495
Lys Gln Lys Asn Val Pro Val Ser Val Cys Gly Glu Met Ala Gly Asp
            500                 505                 510
Pro Ala Leu Leu Pro Met Phe Leu Gly Leu Gly Val Lys Glu Leu Ser
        515                 520                 525
```

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```
Ala Val Ile Pro Ala Ile Asn Ser Leu Lys Met Arg Leu Leu Asp Leu
    530                 535                 540
Asn Ser Arg Glu Cys Ser Arg Leu Thr Lys Gln Leu Leu Arg Ala Lys
545                 550                 555                 560
Thr Tyr Glu Glu Val His Gln Leu Leu Tyr Val
                565                 570
<210>94
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<212>PRT
<213>Chlamydia trachomatis
<400>94
Met Gly Ser Gly Tyr Ala Lys Lys Lys Lys Glu Ala Lys Leu Met Glu
  1               5                  10                  15
Arg Gln Phe Met Glu Met Glu Ala Ser Leu Glu Gln Lys Arg Phe Ser
            20                  25                  30
Gly Glu Ala Gly Asn Gly Leu Val Ser Val Thr Ile Asn Gly Lys Cys
        35                  40                  45
Asp Leu Val Asp Val Arg Ile Lys Pro Asp Cys Leu Asp Pro Glu Asp
    50                  55                  60
Pro Glu Val Val Ala Asp Leu Phe Arg Ala Asp Leu Lys Gln Leu Lys
65                  70                  75                  80
Gln Leu Trp Ile Val Lys Cys Pro Leu Cys Lys Trp Glu Cys Arg Ser
                85                  90                  95
Asn Phe Phe Arg Tyr Thr Tyr Arg Ser
            100                 105
<210>95
<211>216
<212>PRT
<213>Chlamydia trachomatis
<400>95
Pro Ile Ser Thr Cys Arg Ser His Tyr Tyr Pro Lys Leu Arg Thr Ser
  1               5                  10                  15
Val Thr Pro Val Ser Asp Ala Met Gln Met Gly Val Ala Pro Ala His
            20                  25                  30
Phe Leu Gln Asp Val Thr Leu Leu Phe Arg Ser Phe Leu Leu Lys Gln
        35                  40                  45
Tyr Ser Lys Gln Phe His Ser Val Ala Thr Lys Tyr Ser Ser Glu Ile
    50                  55                  60
Leu Leu Glu Ile Leu Asp Phe Leu Gly Glu Ser Ala Arg His Ile Asn
65                  70                  75                  80
Leu Ala Leu Phe Glu Lys Thr Phe Leu Glu Thr Val Ile Ile Arg Leu
                85                  90                  95
Leu Arg Ile Tyr Ser Arg Pro Thr Phe Ser Gln Leu Val Ser Gln Ile
            100                 105                 110
Arg Gln Pro Ala Pro Thr Gln Ile Arg Pro Ile Pro Thr Ala Ser Glu
        115                 120                 125
Leu Glu Ser Cys Pro Pro Gln Ile Lys Ser Ser Asn Thr Glu Glu Thr
    130                 135                 140
Lys Ser Ser Pro Gln Pro Thr Ala Val Ala Lys Leu Ser Gln Gly Ser
145                 150                 155                 160
Leu Leu Thr Ala Ala Ser Ser Gln Thr Lys Lys Glu Thr Ile His Gln
                165                 170                 175
Glu Thr Pro Pro Pro Ser Leu Asp Lys Ile Ser Pro Ser Glu Ser Ala
            180                 185                 190
Ala Ile Asp Thr Leu Leu Gln Phe Ala Val Val Glu Phe Ser Gly Val
        195                 200                 205
Leu Thr Lys Glu Pro Lys His Gly
    210                 215
<210>96
<211>265
<212>PRT
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<213>Chlamydia trachomatis
<400>96
Asp Leu Leu Ser Ser Phe Phe Lys Lys Val Pro Pro Glu Gln Phe Phe
1 5 10 15
Arg Asp Ser Trp Pro Gly Tyr Ser Arg Val Tyr Thr Gln Glu Phe Pro
20 25 30
Ala Ser Glu Ser Arg Arg His Ala Tyr Ile Phe Ser Gly Ile Arg Gly
35 40 45
Thr Gly Lys Thr Thr Leu Ala Arg Val Phe Ala Lys Ala Leu Asn Cys
50 55 60
Gln Asn Pro Thr Gln Asp Gln Glu Pro Cys Asn Gln Cys Ala Ile Cys
65 70 75 80
Lys Glu Ile Ser Leu Gly Thr Ser Met Asp Val Ile Glu Ile Asp Gly
85 90 95
Ala Ser His Arg Gly Ile Glu Asp Ile Arg Gln Ile Asn Glu Thr Val
100 105 110
Leu Phe Val Pro Ser Lys Ser Arg Tyr Lys Ile Tyr Ile Ile Asp Glu
115 120 125
Val His Met Leu Thr Lys Glu Ala Phe Asn Ser Leu Leu Lys Thr Leu
130 135 140
Glu Glu Pro Pro Ala His Val Lys Phe Phe Leu Ala Thr Thr Glu Ile
145 150 155 160
Ala Lys Ile Pro Asn Thr Ile Ser Ser Arg Cys Gln Lys Met Leu Leu
165 170 175
Lys Arg Ile Ser Glu Glu Thr Ile Ile Asp Lys Leu Ala Thr Ile Ala
180 185 190
Lys Gln Glu Gly Thr Glu Thr Ser Arg Glu Ala Leu Leu Pro Ile Ala
195 200 205
Lys Ala Ala Gln Gly Ser Leu Arg Asp Ala Glu Ser Leu Tyr Asp Tyr
210 215 220
Val Val Gly Leu Phe Pro Glu Ser Leu Asp Pro Asp Ser Thr Ala Lys
225 230 235 240
Ala Leu Gly Ile Leu Ser Glu Asp Ser Leu Tyr Gln Leu Ala Glu Ala
245 250 255
Ile Thr Thr Gln Asn Tyr Glu Gln Ala
260 265
<210>97
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<213>Chlamydia trachomatis
<400>97
His Leu Arg Thr Cys Cys Ala Ile Leu Glu Lys Asp Pro Ser Val Phe
1 5 10 15
Ser Glu Ile Ile Phe Leu Asp Ser Tyr Pro Gln Ile Ala Ser Ser Arg
20 25 30
Ser Asp Ile Ser Thr Tyr Phe Asp Ile Ala Pro Ser Leu Arg Asn Phe
35 40 45
Tyr Ala Ser Leu Thr Gln Ala Lys Ala Leu Asn Ile Ser Val Ser Met
50 55 60
Phe Ser Pro Asn Thr Lys Gln Gly Gln Cys Ser Asp Cys Trp Gly Leu
65 70 75 80
Gly Tyr Gln Trp Ile Asp Arg Ala Phe Tyr Ala Met Glu Lys Arg Pro
85 90 95
Cys Pro Thr Cys Gly Gly Phe Arg Val Gln Pro Leu Ile Gln Glu Val
100 105 110
Val Tyr Glu Gly Lys His Phe Gly Gln Leu Leu Gln Ala Ser Leu Asn
115 120 125
Glu Val Ala Glu Thr Phe Ser Phe Leu Lys Lys Ile Gln Lys Pro Leu
130 135 140
His Thr Leu Ile Thr Asn Gly Leu Gly Tyr Leu Ser Leu Gly Gln Asn
145 150 155 160

Sequence Listing

Met Ala Ser Leu Ser Leu Ser Glu Lys Ile Ala Ile Lys Leu Thr Lys
165 170 175
His Leu Phe Leu Pro Pro Lys His Pro Thr Leu Phe Leu Leu Asp Glu
180 185 190
Ile Ala Thr Ser Leu Asp Asn Gln Gln Gln Ser Ala Leu Leu Val Gln
195 200 205
Leu Asn Thr Leu Val Ser Leu Gly His Thr Val Val Ile Ile Glu Asn
210 215 220
His Pro Ala Phe Ser Gln Gln Ala Asp Phe Trp Ile Gln Met Gly Arg
225 230 235 240
Lys Thr Asp Asn His Ile Leu Phe Ala Gly Pro Asn Pro Asn Leu Ser
245 250 255
Phe Thr

<210>98
<211>189
<212>PRT
<213>Chlamydia trachomatis
<400>98
Ile Gly Leu Leu Asp Arg Val Gly Leu Gly Tyr Val Ile Leu Gly Gln
1 5 10 15
Glu Gln Gln Ser Leu Ser Asp Gly Glu His Tyr Arg Leu Leu Leu Ala
20 25 30
Lys Ala Phe Ser Ser Gly Leu Thr Asp Val Ile Tyr Leu Leu Glu Asp
35 40 45
Pro Leu Ala Gly Ile His Pro Glu Asp Ala Pro Cys Leu Leu Ala Val
50 55 60
Ile Lys Lys Leu Val Thr Asn His Asn Thr Val Ile Val Thr Asp Arg
65 70 75 80
Glu Gly Ser Leu Ala Glu His Ala Asp Tyr Leu Leu His Leu Gly Pro
85 90 95
Glu Pro Gly Pro Asn Gly Gly Tyr Leu Leu Ser Thr Ser Ala Leu Lys
100 105 110
Gln Ser Gln Pro Val Leu Cys Asn Thr Arg Ser Ser Glu Glu Thr Pro
115 120 125
Gln Leu Ser Val Ser Val Ser Thr Ser Met Ile Gln Ile Glu Asn Leu
130 135 140
Ala Phe Pro Leu Gln Arg Leu Ser Thr Ile Ser Gly Val Ser Gly Ser
145 150 155 160
Gly Lys Thr Thr Leu Leu Asn Ser Ile Tyr Glu His Ala Ala Leu Phe
165 170 175
Leu Lys Arg Ile Leu Leu Tyr Ser Gln Lys Leu Phe Phe
180 185

<210>99
<211>1224
<212>PRT
<213>Chlamydia trachomatis
<400>99
Asn Ser Cys His Ser Arg Trp Asn Ser Thr Asp Phe Ala Arg Ser Ser
1 5 10 15
Ser Arg Gln Asp Val Leu Thr Val Arg Glu Cys Leu Arg Gln Gly Phe
20 25 30
Thr Lys Val Leu Ile Asp Glu Glu Val Val Pro Ile His Lys Phe Leu
35 40 45
Thr Thr Gly Ile Pro Val Pro Gly Gln Leu Ile Val Asp Thr Leu Ile
50 55 60
Lys Asn Thr Ser Asn Thr Pro Arg Leu Lys Val Ser Leu Phe Thr Thr
65 70 75 80
Leu Asp Ile Gly His Gly Glu Cys Ser Leu His Phe Asp Asn Gln Lys
85 90 95
Arg Val Phe Ser Thr Gln Ala Thr Leu Pro Glu Thr Gln Gln Thr Tyr

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                100                 105                 110
Ala Pro Leu Ser Pro Asp Leu Phe Ser Ser His Ser His Lys Asp Arg
        115                 120                 125
Cys Pro Gln Cys Gln Gly Ser Gly Ile Phe Ile Ser Ile Asp Asp Pro
    130                 135                 140
Cys Ile Ile Gln Gln Thr Leu Ser Ile Glu Asp Asn Cys Cys Pro Phe
145                 150                 155                 160
Ala Gly Asn Cys Ser Thr Phe Leu Tyr Arg Thr Ile Tyr Gln Ser Leu
                165                 170                 175
Ala Asp Ser Leu Gly Phe Ser Leu Ser Thr Pro Trp Gln Asn Leu Ser
            180                 185                 190
Pro Glu Ile Gln His Ile Phe Leu Tyr Gly Lys Glu Gly Leu Ser Ile
        195                 200                 205
Pro Val Lys Leu Phe Asp Gly Thr Leu Gly Lys Lys Thr Gln Thr His
    210                 215                 220
Lys Gln Trp Lys Gly Val Leu Asn Glu Ile Gly Glu Lys Ile Arg Phe
225                 230                 235                 240
Ser Asn Lys Pro Ala Arg Tyr Leu Pro Lys Gly Thr Ser Tyr Thr Val
                245                 250                 255
Cys Pro Arg Cys Asn Lys Thr Gly Leu Ser Asp Tyr Ala Asn Ala Thr
            260                 265                 270
Arg Trp His Gly Lys Ser Phe Ala Asp Phe Gln Gln Met Ser Leu Gln
        275                 280                 285
Glu Leu Phe Ile Phe Leu Asn Gln Leu Pro Lys Lys Glu Leu Ala Ile
    290                 295                 300
Glu Glu Val Ile Gln Gly Phe Lys Ser Arg Leu Ala Ile Leu Ile Asp
305                 310                 315                 320
Leu Gly Leu Pro Tyr Leu Ser Pro Glu Arg Ala Ile Asp Thr Leu Ser
                325                 330                 335
Gly Gly Glu Arg Glu Arg Thr Ala Leu Ala Lys His Leu Gly Ala Glu
            340                 345                 350
Leu Ile Gly Val Met Tyr Ile Leu Asp Glu Pro Ser Ile Gly Leu His
        355                 360                 365
Pro Gln Asp Thr His Lys Leu Met Asn Val Ile Arg Arg Leu Arg Asp
    370                 375                 380
Gln Gly Asn Thr Val Leu Leu Val Glu His Asp Glu Gln Met Ile Ser
385                 390                 395                 400
Leu Ala Asp Arg Val Ile Asp Ile Gly Pro Gly Ala Gly Ile Phe Gly
                405                 410                 415
Gly Glu Val Val Phe Asn Gly Ser Pro Arg Glu Phe Leu Ala Lys Ser
            420                 425                 430
Asp Ser Leu Thr Ala Gln Tyr Leu Arg Gln Glu Gln His Ile Ser Val
        435                 440                 445
Pro Ala Lys Arg Thr Asn Ser Leu Gly Thr Ile Thr Leu Ser Lys Ala
    450                 455                 460
Asn Lys His Asn Leu Lys Asp Leu Thr Val Ser Ile Pro Leu Gly Gln
465                 470                 475                 480
Met Thr Val Val Thr Gly Val Ser Gly Ser Gly Lys Ser Ser Leu Ile
                485                 490                 495
Asn Asp Thr Leu Val Pro Cys Val Glu Glu Phe Ile Glu Gln Gly Phe
            500                 505                 510
Cys Ser Thr Leu Ser Ile Gln Gly Ala Leu Ser Arg Leu Val His Ile
        515                 520                 525
Asn Arg Asp Leu Pro Gly Arg Ser Gln Arg Ser Ile Pro Leu Thr Tyr
    530                 535                 540
Ile Lys Ala Phe Asp Glu Val Arg Gln Leu Phe Ala Glu Gln Pro Arg
545                 550                 555                 560
Cys Lys Thr Leu Gly Leu Thr Lys Ser His Phe Ser Phe Asn Thr Pro
                565                 570                 575
Leu Gly Ala Cys Ala Glu Cys Gly Gly Leu Gly Ser Ile Thr Thr Thr
            580                 585                 590
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SEQUENCE LISTING

SEQUENCE LISTING

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Asp Asn Arg Asp Ser Ile Thr Cys Pro Ser Cys Leu Gly Lys Arg Phe
        595                 600                 605
Leu Pro Gln Val Leu Glu Val Arg Tyr Lys Asn Lys Thr Ile Ala Asp
    610                 615                 620
Ile Leu Glu Met Thr Ala Tyr Glu Ala Lys Asn Phe Phe Leu Asp Glu
625                 630                 635                 640
Pro Ser Ile His Gln Lys Ile Glu Thr Leu Cys Thr Leu Gly Leu Gln
                645                 650                 655
Tyr Leu Pro Leu Gly Arg Pro Leu Tyr Ser Leu Ser Gly Gly Glu Ile
            660                 665                 670
Gln Arg Leu Lys Leu Ala Tyr Glu Leu Leu Ala Pro Val Lys His Pro
        675                 680                 685
Thr Leu Tyr Val Leu Asp Glu Pro Thr Thr Gly Leu His Thr His Asp
    690                 695                 700
Val Lys Gln Leu Ile Tyr Val Val Gln Ser Leu Ile His Gln Gly His
705                 710                 715                 720
Ser Val Ile Ile Ile Glu His Asn Met His Val Val Lys Val Ala Asp
                725                 730                 735
Tyr Ile Leu Glu Leu Gly Pro Glu Gly Gly Asn Lys Gly Gly Tyr Leu
            740                 745                 750
Ile Ala Ser Cys Ser Pro Glu Glu Leu Ile His Lys His Thr Pro Thr
        755                 760                 765
Ala Ile Ala Leu Arg Pro Phe Leu Ser Ser Pro Gln Glu Leu Pro Tyr
    770                 775                 780
Leu Pro Asp Pro Ser Pro Lys Pro Pro Val Pro Ala Ala Ile Thr Ile
785                 790                 795                 800
Ala Asn Ala His Gln Tyr Asn Leu Lys His Ile Asp Leu Ser Ile Pro
                805                 810                 815
Arg Tyr Ala Leu Thr Ala Val Thr Gly Pro Ser Ala Ser Gly Lys His
            820                 825                 830
Ser Leu Val Phe Asp Ile Leu His Ala Ala Gly Asn Ile Ala Tyr Ala
        835                 840                 845
Glu Leu Phe Pro Pro Tyr Ile Arg Gln Ala Leu Ile Lys Lys Thr Pro
    850                 855                 860
Leu Pro Ala Val Asp Lys Val Thr Gly Leu Ser Pro Val Ile Ala Ile
865                 870                 875                 880
Glu Lys Thr Ser Ala Ser Arg Asn Ser Asn His Ser Val Ala Ser Ala
                885                 890                 895
Leu Glu Ile Ser Glu Met Leu Glu Ser Leu Phe Thr Arg Ile Gly His
            900                 905                 910
Pro Tyr Ser Pro Ile Ser Gly Asp Ala Leu Arg Thr Ile Ser Pro Glu
        915                 920                 925
Thr Ile Ala Glu Glu Leu Leu Thr His Tyr Thr Lys Gly Tyr Val Thr
    930                 935                 940
Ile Thr Val Pro Phe Pro Lys Glu Glu Glu Phe Phe Ser Tyr Thr Gln
945                 950                 955                 960
Glu Met Leu Gln Glu Gly Phe Leu Lys Leu Tyr Ala Asn Glu Gln Phe
                965                 970                 975
Tyr Asp Leu Asp Gly Pro Phe Pro Thr Ser Leu Glu Asn Pro Ala Leu
            980                 985                 990
Val Ile His His Val Lys Ile Leu Glu Lys Asn Leu Pro Ser Leu Leu
        995                 1000                1005
Ala Ser Leu Thr Leu Ala Phe Ser Lys Ala Ser Ser Val Cys Leu His
    1010                1015                1020
Ile Glu Tyr Ala Gly Thr Ser Leu Ser Lys Thr Tyr Arg Gln Gly Leu
1025                1030                1035                1040
Gln Asp Ala Ser Gly Asn Leu Phe Pro Asn Ile Glu Thr Pro Ser Ile
                1045                1050                1055
Leu Asn His Glu Ser Tyr Leu Cys Pro Leu Cys His Gly Lys Gly Phe
            1060                1065                1070
Leu Ser Thr Cys Ser Ile Leu Pro His Lys Lys Arg Phe Ala Gln His
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        1075                1080                1085
Thr Pro Ile Ser Leu Phe Thr Ser Leu Phe Pro Asn Gln Asp Pro Ser
    1090                1095                1100
Pro Ile Tyr Pro Leu Leu Asn Glu Leu Gly Ile Pro Ser Ile Ala Leu
1105                1110                1115                1120
Phe Gln Glu Ile Asp Val Leu Ser Phe Glu Ser Leu Cys Leu Gly Thr
                1125                1130                1135
Gln Gln His Leu Gly Leu Asn Ala Leu Cys Thr Lys Ala Met Leu Met
            1140                1145                1150
Glu Ser Glu Glu Asp Phe Pro Pro Asp Leu Ile Ser Lys Thr Pro Cys
        1155                1160                1165
Asn Gln Cys Gln Gly Leu Gly Val Tyr Thr Tyr Lys His Cys Ile Arg
    1170                1175                1180
Ile His Ser Ile Ser Leu Ser Glu Ile Tyr Gln Ser Asn Val Ala Phe
1185                1190                1195                1200
Leu Lys Lys Leu Leu Leu Ser Val Glu Glu Glu Pro Ser Leu Val Gln
                1205                1210                1215
Asp Ile Leu Ser Arg Leu Ala Phe
            1220
<210>100
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<212>PRT
<213>Chlamydia trachomatis
<400>100
Met Ser Ser Ile Val Arg Leu Ser Gly Ile Thr Val Arg Asn Leu Lys
  1               5                  10                  15
Asn Ile Thr Val Glu Phe Cys Pro Arg Glu Ile Val Leu Phe Thr Gly
             20                  25                  30
Val Ser Gly Ser Gly Lys Ser Ser Leu Ala Phe Asn Thr Ile Tyr Ala
         35                  40                  45
Ala Gly Arg Lys Arg Tyr Leu Ala Thr Leu Pro Ser Phe Phe Ala Thr
     50                  55                  60
Lys Leu Asp Ser Leu Pro Asp Pro Ser Val Lys Lys Ile Glu Gly Leu
 65                  70                  75                  80
Ser Pro Thr Val Ala Val Lys Gln Asn Phe Phe Glu Gln His Val His
                 85                  90                  95
Ala Thr Val Gly Ser Thr Thr Glu Ile Asn Ser Tyr Leu Ala Leu Leu
            100                 105                 110
Phe Ser Leu Glu Gly Gln Ala Tyr Asp Pro Val Thr Leu His Pro Leu
        115                 120                 125
Thr Leu Tyr Ser Lys Glu Lys Ile Leu Ser Glu Ile Ala Ala Ile Pro
    130                 135                 140
Asp Gly Thr Gln Leu Thr Leu Leu Ala Pro Leu Pro Ala Arg Met Phe
145                 150                 155                 160
Leu Pro Phe Glu Asn Val Ser Val Lys Gly Leu Pro Lys Ser Ser Leu
                165                 170                 175
Met Lys Arg Leu Phe Leu Phe Ile Ser Phe Leu Gln Gln Ala Phe Leu
            180                 185                 190
Phe Pro Val Asn Ser Leu Ser Ile Arg
        195                 200
<210>101
<211>496
<212>PRT
<213>Chlamydia trachomatis
<400>101
Ile Phe Tyr Ser Leu Ile Pro Val Ser Arg Phe Met Ile Ala Arg Thr
  1               5                  10                  15
Lys Ile Ile Cys Thr Ile Gly Pro Ala Thr Asn Thr Pro Glu Met Leu
             20                  25                  30
Glu Lys Leu Leu Asp Ala Gly Met Asn Val Ala Arg Leu Asn Phe Ser
         35                  40                  45
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His Gly Thr His Glu Ser His Gly Arg Thr Ile Ala Ile Leu Lys Glu
     50                  55                  60
Leu Arg Glu Lys Arg Gln Val Pro Leu Ala Ile Met Leu Asp Thr Lys
 65                  70                  75                  80
Gly Pro Glu Ile Arg Leu Gly Gln Val Glu Ser Pro Ile Lys Val Gln
                 85                  90                  95
Pro Gly Asp Arg Leu Thr Leu Val Ser Lys Glu Ile Leu Gly Ser Lys
            100                 105                 110
Glu Ser Gly Val Thr Leu Tyr Pro Ser Cys Val Phe Pro Tyr Val Arg
        115                 120                 125
Glu Arg Ala Pro Val Leu Ile Asp Asp Gly Tyr Ile Gln Ala Val Val
    130                 135                 140
Val Asn Ala Gln Glu His Met Val Glu Ile Glu Phe Gln Asn Ser Gly
145                 150                 155                 160
Glu Ile Lys Ser Asn Lys Ser Leu Ser Ile Lys Asp Ile Asp Val Ala
                165                 170                 175
Leu Pro Phe Met Thr Glu Lys Asp Ile Ala Asp Leu Lys Phe Gly Val
            180                 185                 190
Glu Gln Glu Leu Asp Leu Ile Ala Ala Ser Phe Val Arg Cys Asn Glu
        195                 200                 205
Asp Ile Asp Ser Met Arg Lys Val Leu Glu Ser Phe Gly Arg Pro Asn
    210                 215                 220
Met Pro Ile Ile Ala Lys Ile Glu Asn His Leu Gly Val Gln Asn Phe
225                 230                 235                 240
Gln Glu Ile Ala Arg Ala Ala Asp Gly Ile Met Ile Ala Arg Gly Asp
                245                 250                 255
Leu Gly Ile Glu Leu Ser Ile Val Glu Val Pro Gly Leu Gln Lys Phe
            260                 265                 270
Met Ala Arg Ala Ser Arg Glu Thr Gly Arg Phe Cys Ile Thr Ala Thr
        275                 280                 285
Gln Met Leu Glu Ser Met Ile Arg Asn Pro Leu Pro Thr Arg Ala Glu
    290                 295                 300
Val Ser Asp Val Ala Asn Ala Ile Tyr Asp Gly Thr Ser Ala Val Met
305                 310                 315                 320
Leu Ser Gly Glu Thr Ala Ser Gly Ala His Pro Val His Ala Val Lys
                325                 330                 335
Thr Met Arg Ser Ile Ile Gln Glu Thr Glu Lys Thr Phe Asp Tyr His
            340                 345                 350
Ala Phe Phe Gln Leu Asn Asp Lys Asn Ser Ala Leu Lys Val Ser Pro
        355                 360                 365
Tyr Leu Glu Ala Ile Gly Phe Ser Gly Ile Gln Ile Ala Glu Lys Ala
    370                 375                 380
Ser Ala Lys Ala Ile Ile Val Tyr Thr Gln Thr Gly Gly Ser Pro Met
385                 390                 395                 400
Phe Leu Ser Lys Tyr Arg Pro Tyr Leu Pro Ile Ile Ala Val Thr Pro
                405                 410                 415
Asn Arg Asn Val Tyr Tyr Arg Leu Ala Val Glu Trp Gly Val Tyr Pro
            420                 425                 430
Met Leu Thr Leu Glu Ser Asn Arg Thr Val Trp Arg His Gln Ala Cys
        435                 440                 445
Val Tyr Gly Val Glu Lys Gly Ile Leu Ser Asn Tyr Asp Lys Ile Leu
    450                 455                 460
Val Phe Ser Arg Gly Ala Gly Met Gln Asp Thr Asn Asn Leu Thr Leu
465                 470                 475                 480
Thr Thr Val His Asp Ala Leu Ser Pro Ser Leu Asp Glu Ile Val Pro
                485                 490                 495
<210>102
<211>337
<212>PRT
<213>Chlamydia trachomatis
<400>102
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Lys Arg Pro Ile Arg Tyr His Gly Val Lys Ala His Phe Gln Asn Thr
 1               5                  10                  15
Ser Leu Lys Lys Thr Ser Gly Asn Val Glu Leu Gln Thr Pro Ile Ser
            20                  25                  30
Phe Pro Gln His Ala Gly Asn Ile Leu Cys Arg Leu Gly Lys Lys Tyr
        35                  40                  45
Pro Gln Leu Gln Val Val Thr Pro Ala Met Ser Leu Gly Ser Cys Leu
    50                  55                  60
Glu Asp Phe Arg Lys Gln Phe Pro Asp Arg Phe Thr Asp Val Gly Ile
65                  70                  75                  80
Ala Glu Gly His Ala Val Thr Phe Ser Ala Gly Ile Ala Arg Ser Gly
                85                  90                  95
Thr Pro Val Cys Cys Ser Ile Tyr Ser Thr Phe Leu His Arg Ala Met
            100                 105                 110
Asp Asn Val Phe His Asp Val Cys Met Gln Glu Leu Pro Val Ile Phe
        115                 120                 125
Ala Ile Asp Arg Ala Gly Leu Ala Phe His Asp Gly Arg Ser His His
    130                 135                 140
Gly Ile Tyr Asp Leu Gly Phe Leu Cys Ser Met Pro Asn Met Val Ile
145                 150                 155                 160
Cys Gln Pro Arg Asn Ala Leu Val Leu Glu Arg Leu Phe Phe Ser Ser
                165                 170                 175
Leu Leu Trp Lys Ser Pro Cys Ala Ile Arg Tyr Pro Asn Ile Pro Ala
            180                 185                 190
Asn Glu Lys Ala Ser Asn Ser Ser Phe Pro Phe Ser Pro Ile Leu Pro
        195                 200                 205
Gly Glu Ala Glu Ile Leu Cys Gln Gly Asp Asp Leu Leu Leu Ile Ala
    210                 215                 220
Leu Gly His Met Cys Asn Thr Ala Leu Thr Val Lys Glu His Leu Leu
225                 230                 235                 240
Asp Tyr Gly Ile Ser Thr Thr Val Val Asp Pro Ile Phe Ile Lys Pro
                245                 250                 255
Leu Asp Arg Lys Leu Leu Gln Ser Leu Leu Thr His His Ser Lys Val
            260                 265                 270
Ile Ile Leu Glu Glu His Ser Ile His Gly Gly Leu Gly Ser Glu Phe
        275                 280                 285
Leu Leu Phe Leu Asn Gln His Asn Ile Lys Ala Asp Val Leu Ser Leu
    290                 295                 300
Gly Val Pro Asp Met Xaa Ile Pro His Gly Asn Pro Glu Leu Phe Lys
305                 310                 315                 320
Phe Asp Trp Thr His Gln Arg Ser His His Ser Thr Asn Pro Phe Ser
                325                 330                 335
Phe
```

<210>103
<211>296
<212>PRT
<213>Chlamydia trachomatis
<400>103

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Met Thr Tyr Ser Leu Leu Pro His Ile His Ser Pro Gln Asp Leu His
 1               5                  10                  15
Ala Leu Ser Leu Asp Lys Leu Pro Val Leu Cys Asp Glu Ile Arg Asn
            20                  25                  30
Lys Ile Ile Glu Ser Leu Ser Leu Thr Gly Gly His Leu Ala Ser Asn
        35                  40                  45
Leu Gly Gly Val Glu Leu Thr Val Ala Leu His Tyr Val Phe Ser Ser
    50                  55                  60
Pro Asp Asp Gln Phe Ile Phe Asp Val Gly His Gln Ser Tyr Val His
65                  70                  75                  80
Lys Leu Leu Thr Gly Arg Asn Thr Glu Ala Phe Ser Asn Ile Arg His
                85                  90                  95
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```
Asp Asn Gly Leu Ser Gly Phe Thr Thr Pro Gln Glu Ser Asn His Asp
            100                 105                 110
Ile Phe Phe Ser Gly His Ala Gly Asn Ala Leu Ser Leu Ala Leu Gly
        115                 120                 125
Leu Ala Lys Gly Ser Ser Asn Ser Ser Ser His Ile Leu Pro Ile Leu
    130                 135                 140
Gly Asp Ala Ala Phe Ser Cys Gly Leu Thr Leu Glu Ala Leu Asn Asn
145                 150                 155                 160
Ile Pro Ala Asp Leu Ser Lys Phe Ile Ile Val Leu Asn Asp Asn Gln
                165                 170                 175
Met Ser Ile Ser Glu Asn Val Gly Asn Ile Pro Gln Gly Ile Ser Gln
            180                 185                 190
Trp Ile Tyr Pro Gln Lys Ile Ser Lys Leu Ser Gln Lys Ile His Ser
        195                 200                 205
Trp Ile Gln Asn Leu Pro Ser Phe Leu His Lys Lys Lys Thr Leu Ser
    210                 215                 220
His Lys Val Asp Ile Ala Leu Lys Ser Leu Ser His Pro Leu Phe Glu
225                 230                 235                 240
Gln Phe Gly Leu His Tyr Val Gly Pro Ile Asp Gly His Asn Val Lys
                245                 250                 255
Lys Leu Val Gln Ala Leu Gln Met Ile Lys Asp Gln Pro Gln Pro Ile
            260                 265                 270
Leu Phe His Val Cys Thr Val Lys Gly Asn Gly Leu Thr Glu Ala Glu
        275                 280                 285
Arg Asp Arg Phe Ala Ile Met Glu
    290                 295
<210>104
<211>92
<212>PRT
<213>Chlamydia trachomatis
<400>104
Pro Val Met Gln Glu Ile Ser Val Pro Glu Ala Ser His Leu Asp Thr
  1               5                  10                  15
Val Ile Gln Arg Leu Leu Val Leu Gln Lys Ala Leu Glu Asp Cys His
             20                  25                  30
Ser Val Glu Ala Ile Leu Ala Ile Tyr Glu Glu Met Phe Ser Leu Ile
         35                  40                  45
Gln Glu Gly Glu Thr Asn Leu Asn His Val Glu Gln Leu Ser Phe Gln
     50                  55                  60
Leu Gln Leu Asn Pro Asp Gly Ser Val Ala Val Asp Thr Ser Gly Asn
 65                  70                  75                  80
Pro Ile Lys His Pro Phe Ile Pro Gly Glu Ser Val
                 85                  90
<210>105
<211>530
<212>PRT
<213>Chlamydia trachomatis
<400>105
Leu Glu Glu Pro Leu Tyr Leu Gln Arg Ile Ser Tyr Pro Leu Tyr Asn
  1               5                  10                  15
Lys Ser Ile Ser His Asn Ser His Val Pro Met Ser Ile Thr Ser Pro
             20                  25                  30
Pro Ile Glu Val Ser Val Leu Thr Asp Ser Ile Lys Asn Leu Leu Glu
         35                  40                  45
Lys Asn Phe Leu Arg Val Val Val Lys Gly Glu Leu Ser Asn Val Ser
     50                  55                  60
Leu Gln Thr Ser Gly His Leu Tyr Phe Ala Ile Lys Asp Ser Lys Ala
 65                  70                  75                  80
Val Leu Asn Gly Ala Phe Phe His Phe Arg Ser Lys Tyr Phe Asp Arg
                 85                  90                  95
Lys Pro Lys Asp Gly Asp Tyr Val Ile Leu His Gly Lys Leu Thr Val
```

```
                100                 105                 110
Tyr Ala Pro Arg Gly Gln Tyr Gln Ile Val Ala Tyr Ala Leu Thr Phe
        115                 120                 125
Ser Gly Glu Gly Asn Leu Leu Gln Gln Phe Glu Glu Arg Lys Gln Arg
    130                 135                 140
Leu Ala Ala Glu Gly Tyr Phe Asp Pro Lys Arg Lys Lys Pro Leu Pro
145                 150                 155                 160
Ser Gly Ala Arg Val Ile Gly Val Ile Thr Ser Pro Thr Gly Ala Val
                165                 170                 175
Ile Gln Asp Ile Leu Arg Val Leu Ser Arg Arg Cys His Gln Phe Gln
            180                 185                 190
Val Ile Leu Tyr Pro Val Thr Val Gln Gly Ala Thr Ala Ala Gln Glu
        195                 200                 205
Ile Ser Gln Ala Ile Gln Phe Phe Asn Gln Asn Ser Met Arg Val His
    210                 215                 220
Ala Leu Ile Ile Ala Arg Gly Gly Gly Ser Ile Glu Asp Leu Trp Ala
225                 230                 235                 240
Phe Asn Glu Glu Glu Leu Val Lys Ser Ile Val Ala Ser Ser Ile Pro
                245                 250                 255
Ile Ile Ser Ala Val Gly His Glu Thr Asp Phe Thr Leu Cys Asp Phe
            260                 265                 270
Ala Ser Asp Val Arg Ala Pro Thr Pro Ser Ala Ala Ala Glu Ile Val
        275                 280                 285
Cys Lys Ser Ser Asp Gln Tyr Arg Gln Glu Leu Gln Asn Leu Arg Arg
    290                 295                 300
Tyr Val Ser Ser His Ala Arg Gln Phe Ile Ala Ala Lys Lys Asn Leu
305                 310                 315                 320
Leu Thr His Trp Gln Arg His Leu Ala Ser Val Asp Phe Tyr His Thr
                325                 330                 335
Ala Gln Gln Thr Leu Asp Tyr Thr Arg Ala Ala Leu Glu Arg Gly Ile
            340                 345                 350
Glu Thr Lys Leu Glu Tyr Tyr Lys Gln Arg Phe Ala Gln Tyr Arg Arg
        355                 360                 365
Trp Leu Lys Ser Asp Val Leu Ile Arg Ile Glu Lys His Leu Ala Asp
    370                 375                 380
Leu Asn Gln Ser Leu Met Leu Ser Ile Lys Asn Lys Ile Tyr Thr Lys
385                 390                 395                 400
Lys Thr Ser Leu Asn Gln Leu Tyr Thr Ser Cys Leu Lys Asn Glu Leu
                405                 410                 415
Leu Asn Leu Gln His Arg Thr Gln His Ser Arg Asn Ile Leu Ser Gln
            420                 425                 430
Leu Ser Arg Arg Leu His Ile Ala Ile Ala Ser Ser Gln Gln Thr His
        435                 440                 445
Gln Glu Cys Leu Val Arg Leu Gln Asn Glu Leu Ser Phe Thr Ile Gln
    450                 455                 460
His Leu Leu Thr Lys Ala Lys Glu Arg Cys Gln Ala Ile Gln Glu Gln
465                 470                 475                 480
Ala Ser Ser Leu Asn Pro Lys Asn Val Leu Lys Arg Gly Phe Ala Gln
                485                 490                 495
Leu Phe Asp Phe Asn Lys His Phe Val Ile Ile Ser Ala Glu Ser Leu
            500                 505                 510
Lys Gln Ser Asp Leu Val Arg Ser Ala Ser Lys Thr Val Lys Gln Leu
        515                 520                 525
Tyr Gln
    530
<210>106
<211>274
<212>PRT
<213>Chlamydia trachomatis
<400>106
Met Phe Thr Asp Lys Glu Thr His Arg Lys Pro Phe Pro Thr Trp Ala
```

```
  1               5                  10                  15
His Leu Leu His Ser Glu Pro Ser Lys Gln Phe Val Phe Gly Asn Trp
            20                  25                  30
Lys Met Asn Lys Thr Leu Thr Glu Ala Gln Thr Phe Leu Lys Ser Phe
        35                  40                  45
Leu Ser Ser Asp Ile Leu Ser Asn Pro Gln Ile Ile Thr Gly Ile Ile
    50                  55                  60
Pro Pro Phe Thr Leu Leu Ser Ala Cys Gln Gln Ala Val Ser Asp Ser
65                  70                  75                  80
Pro Ile Phe Leu Gly Ala Gln Thr Thr His Glu Ala Asp Ser Gly Ala
                85                  90                  95
Phe Thr Gly Glu Ile Ser Ala Pro Met Leu Lys Asp Ile Gly Val Asp
            100                 105                 110
Phe Val Leu Ile Gly His Ser Glu Arg Arg His Ile Phe His Glu Gln
        115                 120                 125
Asn Pro Val Leu Ala Glu Lys Ala Ala Ala Ala Ile His Ser Gly Met
    130                 135                 140
Ile Pro Val Leu Cys Ile Gly Glu Thr Leu Glu Glu Gln Glu Ser Gly
145                 150                 155                 160
Ala Thr Gln Asp Ile Leu Leu Asn Gln Leu Thr Ile Gly Leu Ser Lys
                165                 170                 175
Leu Pro Glu Gln Ala Ser Phe Ile Leu Ala Tyr Glu Pro Val Trp Ala
            180                 185                 190
Ile Gly Thr Gly Lys Val Ala His Pro Asp Leu Val Gln Glu Thr His
        195                 200                 205
Ala Phe Cys Arg Lys Thr Ile Ala Ser Leu Phe Ser Lys Asp Ile Ala
    210                 215                 220
Glu Arg Thr Pro Ile Leu Tyr Gly Gly Ser Val Lys Ala Asp Asn Ala
225                 230                 235                 240
Arg Ser Leu Ser Leu Cys Pro Asp Val Asn Gly Leu Leu Val Gly Gly
                245                 250                 255
Ala Ser Leu Ser Ser Glu Asn Phe Leu Ser Ile Ile Gln Gln Ile Asp
            260                 265                 270
Ile Pro
```

<210>107
<211>212
<212>PRT
<213>Chlamydia trachomatis
<400>107

```
Pro Leu Cys Cys Met Lys Val Lys Ile Cys Gly Ile Thr His Pro Asp
  1               5                  10                  15
Asp Ala Arg Glu Ala Ala Lys Ala Gly Ala Asp Tyr Ile Gly Met Ile
            20                  25                  30
Phe Ala Lys Asp Ser Arg Arg Cys Val Ser Glu Glu Lys Ala Lys Tyr
        35                  40                  45
Ile Val Glu Ala Ile Gln Glu Gly Asn Ser Glu Pro Val Gly Val Phe
    50                  55                  60
Pro Glu His Ser Val Glu Glu Ile Leu Ala Ile Thr Glu Ala Thr Gly
65                  70                  75                  80
Ile Thr Ser Ile Gln Leu Ser Gly Glu Asp Ile Leu Phe Lys Phe Ser
                85                  90                  95
Gln Leu Arg Glu His Phe Ser Ile Phe Tyr Val Val Ser Val Tyr Ser
            100                 105                 110
Asn Gly Gln Pro Ser Ala Ala Leu Pro Pro Met Asn Asp Ala Val Thr
        115                 120                 125
Val Val Tyr Asp His Ile Gly Gly Glu Arg Gly Ser Pro Phe Asp Trp
    130                 135                 140
Lys Ala Phe Ser Pro Phe Gln His Asn Asn Trp Met Leu Gly Gly Gly
145                 150                 155                 160
Val Asn Leu Trp Asn Ile Lys Glu Gly Ile Ser Leu Leu Asn Pro Arg
```

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```
                165                 170                 175
Gly Ile Asp Val Ser Ser Gly Val Glu Arg Pro Gly Ile Leu Arg Lys
            180                 185                 190
Asp Ile Phe Leu Met Gln Ala Leu Ile Asn Ser Ala Lys Glu Leu Ser
        195                 200                 205
Ser Ser Thr Leu
    210
<210>108
<211>344
<212>PRT
<213>Chlamydia trachomatis
<400>108
Arg Thr Arg Gly Gly Gly Leu Phe Ser Asn Phe Cys Ser Ser Pro Thr
  1               5                  10                  15
Val Gln Ala Leu Leu Arg Ala Trp Asp Arg Phe Phe Ser Arg Val Ser
            20                  25                  30
Asp Gly Arg Phe Leu Gln Ile Tyr Tyr Gly Asp Gly Gly Leu Phe Val
        35                  40                  45
Glu Arg Ala Leu Gln Leu Ile Ser Cys Pro Leu Gln Arg Ala Arg Ile
    50                  55                  60
Arg Val Val Gly Ile Asn Pro Ser Phe Phe Val Thr Val Ser Asp Asn
65                  70                  75                  80
Arg His Phe Tyr Thr Ser Pro Gly Ser Cys Gly Arg Ile Leu Asp Met
                85                  90                  95
Ser Gly Tyr Leu Ser Ala Arg Arg Asp Gly Cys Val Ser His Val Pro
            100                 105                 110
Phe Ser Pro His Ser Gln Ser Ile Thr Pro Gly Val Gly Asp Ala Cys
        115                 120                 125
Phe Glu Leu Gly Leu Arg Met Glu Phe Met Arg Leu Ala Gly Leu Ser
    130                 135                 140
Ser Leu Ser Ala Ala Ser Ser Pro Thr Ser Glu Asp Ser Asp Ser Ser
145                 150                 155                 160
Arg Leu Gln Leu Val Arg Val Val Ser Ser Glu Asp Ser Val Ala Phe
                165                 170                 175
Ala Arg Leu Tyr Ala Ala Leu Asn Glu Asp Ile Thr Ser Ser Val Arg
            180                 185                 190
Ala Ala Asn Pro Phe Pro Phe Ser Tyr Val Arg Leu Ile Leu Leu Leu
        195                 200                 205
Thr Thr Leu Cys Arg His Thr Leu Thr Thr Thr Lys Ala Ala Tyr Ser
    210                 215                 220
Tyr Thr Pro Ala Ser Trp Glu Ala Leu Asp Met Leu Asp Ser Gly Phe
225                 230                 235                 240
Thr Ala Ser Tyr Val Gly Gly Val Leu Ser Glu Ile Phe Leu Leu Cys
                245                 250                 255
Thr His Ser Pro Arg Arg Ala Gln Arg Ser Arg Met Leu Arg Met Leu
            260                 265                 270
Ala Lys Leu Phe Ser Ser Trp Ala Trp Leu Val Gly Val Met Glu Leu
        275                 280                 285
Ser Cys Gly Tyr Gly Val Thr Ile Gln Leu Leu Leu Gln Asn Asp Pro
    290                 295                 300
Arg Gln Ser Cys Leu Arg Asn Leu Phe Phe Trp Met Glu Ser Thr Leu
305                 310                 315                 320
Thr Pro Val Ile Leu Leu Asp Ile Ala Glu Arg Ile Gly Leu Pro Tyr
                325                 330                 335
Gly Ile Glu Leu Leu Asp Trp Ala
            340
<210>109
<211>97
<212>PRT
<213>Chlamydia trachomatis
<400>109
```

```
Leu Lys Ile Ala Arg Asp Met Ser Arg Ser Ser Leu Gln Gln Tyr Leu
  1               5                  10                  15
Tyr Thr Lys Ser Thr Val Ile Ala Asn Ser Thr Thr Pro Ser Leu Asn
            20                  25                  30
Asn Thr Ser Thr Cys Ser Gly Asn Ser Thr Thr Arg Pro Val Leu Pro
        35                  40                  45
Ser Ile Thr Gly Ile Tyr Glu Thr Asp Val Gln Thr Thr Gly Val Ala
    50                  55                  60
Arg Thr Leu Asn Val Ile Arg Met Ile Trp Cys Gly Val Met Leu Leu
65                  70                  75                  80
Tyr Phe Leu Tyr Thr Ala Phe Arg Leu Val Arg Asn Ala Arg Arg Arg
                85                  90                  95
Asn
```

<210>110
<211>149
<212>PRT
<213>Chlamydia trachomatis
<400>110

```
Thr Met Ile Leu Thr Thr Pro Ser Glu His Lys Ala Cys Leu Glu Lys
  1               5                  10                  15
Gln Glu Lys Ala Val Ala Leu Leu Phe Pro Glu Asn Phe Val Lys Asp
            20                  25                  30
Thr Phe Tyr Lys Gln Leu Leu Gln Ile Gly Arg Thr Ala Lys Pro Phe
        35                  40                  45
Pro Lys Glu Phe Leu Thr Lys Glu Asn Leu Val Leu Gly Cys Gln Ser
    50                  55                  60
Asp Leu Tyr Leu His Gly Glu Phe Lys Asn Asn Ala Val Phe Phe Phe
65                  70                  75                  80
Thr Tyr Thr Glu Ala Leu Ile Ser Ser Gly Val Ala Val Leu Phe Ser
                85                  90                  95
Asp Ile Tyr Ser Gly Glu Thr Pro Glu Thr Ile Leu Thr Cys Lys Pro
            100                 105                 110
Leu Phe Phe Glu Lys Leu Ser Arg His Leu Ser Met Gly Arg Ser Arg
        115                 120                 125
Gly Gly Glu Ser Leu Phe Leu Asn Met Gln Arg Ile Ala Val Gln Tyr
    130                 135                 140
Leu Ala Arg Lys Thr
145
```

<210>111
<211>221
<212>PRT
<213>Chlamydia trachomatis
<400>111

```
Ala Met Val Lys Ala Ala His Pro Leu His Ser Ser Ile Ser Gly Ala
  1               5                  10                  15
Leu Pro Leu His Ser Ser Arg Gly Gly Ala Tyr His Asp Ser Leu Gly
            20                  25                  30
Asp Leu His Ser Pro Ile Ser Leu Thr Pro Pro Ala Leu Ser Val Leu
        35                  40                  45
Thr Pro Glu Pro Ala Gln Ser Lys Ser Arg Val Gln Ala Val Ala Asn
    50                  55                  60
Thr Ile Gly Asp Phe Leu Gln Arg Asn Trp Lys His Leu Leu Leu Tyr
65                  70                  75                  80
Ile Leu Ala Trp Ser Leu Ile Leu Ile Cys His Ser Ser Val Ala Leu
                85                  90                  95
Val Leu Ser Ile Trp Leu Gly Ile Gly Phe Gly Ala Gly Val Val Leu
            100                 105                 110
Gly Ile Ile Ser Ala Asn Phe Leu Asp Lys Glu Asn Lys Tyr Pro His
        115                 120                 125
Leu Asn Ser Leu Trp Asn Ile Thr Asn His Gly Leu Gln Gln Leu Asp
```

130 135 140
Pro Asn Gly Thr Arg Gln Val Leu Leu Ala Thr Val Ile Ala Ser Ile
145 150 155 160
Ser Ala Leu Ile Tyr Ala Ser Pro Gln Ala Ile Gly Phe Ile Ile Gly
165 170 175
Ala Phe Leu Gly His Gln Thr Ser Ser Leu Ala Val Tyr Gly Tyr Arg
180 185 190
Phe Lys Ser Gly Gln Asp Ile Leu Gln Ile Arg Asn Cys Leu Ile Asn
195 200 205
Lys Lys Asn Glu Phe Asp Lys Pro Ser Cys Ser Val Gly
210 215 220

<210>112
<211>397
<212>PRT
<213>Chlamydia trachomatis
<400>112

Leu Arg Ile Phe Glu Met Ser Lys Glu Thr Phe Gln Arg Asn Lys Pro
1 5 10 15
His Ile Asn Ile Gly Thr Ile Gly His Val Asp His Gly Lys Thr Thr
20 25 30
Leu Thr Ala Ala Ile Thr Arg Thr Leu Ser Gly Asp Gly Leu Ala Asp
35 40 45
Phe Arg Asp Tyr Ser Ser Ile Asp Asn Thr Pro Glu Glu Lys Ala Arg
50 55 60
Gly Ile Thr Ile Asn Ala Ser His Val Glu Tyr Glu Thr Ala Asn Arg
65 70 75 80
His Tyr Ala His Val Asp Cys Pro Gly His Ala Asp Tyr Val Lys Asn
85 90 95
Met Ile Thr Gly Ala Ala Gln Met Asp Gly Ala Ile Leu Val Val Ser
100 105 110
Ala Thr Asp Gly Ala Met Pro Gln Thr Lys Glu His Ile Leu Leu Ala
115 120 125
Arg Gln Val Gly Val Pro Tyr Ile Val Val Phe Leu Asn Lys Ile Asp
130 135 140
Met Ile Ser Glu Glu Asp Ala Glu Leu Val Asp Leu Val Glu Met Glu
145 150 155 160
Leu Ala Glu Leu Leu Glu Glu Lys Gly Tyr Lys Gly Cys Pro Ile Ile
165 170 175
Arg Gly Ser Ala Leu Lys Ala Leu Glu Gly Asp Ala Ala Tyr Ile Glu
180 185 190
Lys Val Arg Glu Leu Met Gln Ala Val Asp Asp Asn Ile Pro Thr Pro
195 200 205
Glu Arg Glu Ile Asp Lys Pro Phe Leu Met Pro Ile Glu Asp Val Phe
210 215 220
Ser Ile Ser Gly Arg Gly Thr Val Thr Gly Arg Ile Glu Arg Gly Ile
225 230 235 240
Val Lys Val Ser Asp Lys Val Gln Leu Val Gly Arg Asp Thr Lys Glu
245 250 255
Thr Ile Val Thr Gly Val Glu Met Phe Arg Lys Glu Leu Pro Glu Gly
260 265 270
Arg Ala Gly Glu Asn Val Gly Leu Leu Leu Arg Gly Ile Gly Lys Asn
275 280 285
Asp Val Glu Arg Gly Met Val Val Cys Leu Pro Asn Ser Val Lys Pro
290 295 300
His Thr Arg Phe Lys Cys Ala Val Tyr Val Leu Gln Lys Glu Glu Gly
305 310 315 320
Gly Arg His Lys Pro Phe Phe Thr Gly Tyr Arg Pro Gln Phe Phe Phe
325 330 335
Arg Thr Thr Asp Val Thr Gly Val Val Thr Leu Pro Glu Gly Val Glu
340 345 350
Met Val Met Pro Gly Asp Asn Val Glu Phe Glu Val Gln Leu Ile Ser

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        355                 360                 365
Pro Val Ala Leu Glu Glu Gly Met Arg Phe Ala Ile Arg Glu Gly Gly
    370                 375                 380
Arg Thr Ile Gly Ala Gly Thr Ile Ser Lys Ile Ile Ala
385                 390                 395
<210>113
<211>183
<212>PRT
<213>Chlamydia trachomatis
<400>113
Phe Met Phe Lys Trp Tyr Val Val Gln Val Phe Thr Ala Gln Glu Lys
  1               5                  10                  15
Lys Val Lys Lys Ser Leu Glu Asp Phe Lys Glu Ala Ser Gly Met Ser
            20                  25                  30
Asp Phe Ile Gln Gln Ile Ile Leu Pro Ser Glu Asn Val Met Glu Val
        35                  40                  45
Lys Lys Gly Glu His Lys Ile Val Glu Lys Tyr Ile Trp Pro Gly Tyr
    50                  55                  60
Leu Leu Val Lys Met His Leu Thr Asp Glu Ser Trp Ser Tyr Val Lys
65                  70                  75                  80
Lys Thr Gln Gly Val Val Glu Phe Leu Gly Gly Gly Ala Pro Val Ala
                85                  90                  95
Leu Ser Glu Glu Glu Ile Lys Asn Ile Leu Ala Asp Leu Glu Glu Lys
            100                 105                 110
Lys Ser Gly Val Val Gln Lys His Lys Phe Glu Val Gly Ser Gln Val
        115                 120                 125
Lys Ile Asn Asp Gly Val Phe Val Asn Phe Val Gly Val Val Ser Glu
    130                 135                 140
Val Phe His Asp Lys Gly Arg Leu Ser Val Met Val Ser Ile Phe Gly
145                 150                 155                 160
Arg Glu Thr Arg Val Asp Asp Leu Glu Phe Trp Gln Val Glu Glu Val
                165                 170                 175
Val Pro Gly Gln Glu Ser Glu
            180
<210>114
<211>143
<212>PRT
<213>Chlamydia trachomatis
<400>114
Leu Asn Met Ser Asn Lys Lys Ile Ile Lys Ile Ile Lys Leu Gln Ile
  1               5                  10                  15
Pro Gly Gly Lys Ala Asn Pro Ala Pro Pro Ile Gly Pro Ala Leu Gly
            20                  25                  30
Ala Ala Gly Val Asn Ile Met Gly Phe Cys Lys Glu Phe Asn Ala Ala
        35                  40                  45
Thr Gln Asp Arg Pro Gly Asp Leu Leu Pro Val Val Ile Thr Val Tyr
    50                  55                  60
Ser Asp Lys Thr Xaa Ser Phe Val Met Lys Gln Ser Pro Val Ser Ser
65                  70                  75                  80
Leu Ile Lys Lys Ala Leu Gly Leu Glu Ser Gly Ser Lys Ile Pro Asn
                85                  90                  95
Arg Asn Lys Val Gly Lys Leu Thr Arg Ala Gln Ile Thr Ala Ile Ala
            100                 105                 110
Glu Gln Lys Met Lys Asp Met Asp Val Val Leu Leu Glu Ser Ala Glu
        115                 120                 125
Arg Met Val Glu Gly Thr Ala Arg Ser Met Gly Val Asp Val Glu
    130                 135                 140
<210>115
<211>195
<212>PRT
<213>Chlamydia trachomatis
```

<400>115
Met Thr Lys His Gly Lys Arg Ile Arg Gly Ile Gln Glu Thr Tyr Asp
1 5 10 15
Leu Ala Lys Ser Tyr Ser Leu Gly Glu Ala Ile Asp Ile Leu Lys Gln
20 25 30
Cys Pro Thr Val Arg Phe Asp Gln Thr Val Asp Val Ser Val Lys Leu
35 40 45
Gly Ile Asp Pro Arg Lys Ser Asp Gln Gln Ile Arg Gly Ser Val Ser
50 55 60
Leu Pro His Gly Thr Gly Lys Val Leu Arg Ile Leu Val Phe Ala Ala
65 70 75 80
Gly Asp Lys Ala Ala Glu Ala Ile Glu Ala Gly Ala Asp Phe Val Gly
85 90 95
Ser Asp Asp Leu Val Glu Lys Ile Lys Gly Gly Trp Val Asp Phe Asp
100 105 110
Val Ala Val Ala Thr Pro Asp Met Met Arg Glu Val Gly Lys Leu Gly
115 120 125
Lys Val Leu Gly Pro Arg Asn Leu Met Pro Thr Pro Lys Ala Gly Thr
130 135 140
Val Thr Thr Asp Val Val Lys Thr Ile Ala Glu Leu Arg Lys Gly Lys
145 150 155 160
Ile Glu Phe Lys Ala Asp Arg Ala Gly Val Cys Asn Val Gly Val Ala
165 170 175
Asn Phe Leu Ser Ile Val Arg Lys Ser Lys Lys Met Leu Lys Arg Cys
180 185 190
Val Gln Pro
195
<210>116
<211>178
<212>PRT
<213>Chlamydia trachomatis
<400>116
Leu Ser Leu Lys Arg Lys Asn Glu Arg Arg Glu Lys Val Ala Leu Arg
1 5 10 15
Glu Val Glu Glu Lys Ile Thr Ala Ser Gln Gly Phe Ile Leu Leu Arg
20 25 30
Tyr Leu Gly Phe Thr Ala Thr His Ser Arg Ser Phe Arg Asn Asn Leu
35 40 45
Ser Gly Val Ser Ala Glu Phe Glu Val Leu Lys Lys Lys Ile Phe Phe
50 55 60
Lys Ala Leu Glu Thr Ser Gly Val Glu Met Asp Pro Glu Asp Ser Glu
65 70 75 80
Gly His Leu Gly Val Val Phe Ala Tyr Gly Asp Pro Val Ser Ala Ala
85 90 95
Lys Gln Val Leu Asp Phe Asn Lys Gln His Asn Asp Ser Leu Val Phe
100 105 110
Leu Ala Gly Arg Ile Asp Asn Ala Ser Leu Ser Gly Arg Glu Val Glu
115 120 125
Ala Val Ala Lys Leu Pro Ser Met Lys Glu Leu Arg Gln Gln Val Val
130 135 140
Gly Leu Ile Ala Ala Pro Met Ser Gln Val Val Gly Ile Met Asn Ser
145 150 155 160
Val Leu Ser Gly Val Val Ser Cys Val Asp Gln Lys Ala Glu Lys Thr
165 170 175
Gln Glu

<210>117
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>117

```
Lys Ile Ile Gly Arg Lys Val Gly Arg Tyr Ala Ala Ala Pro Val Val
 1               5                  10                  15
Ala Val Ala Gly Ala Ala Ala Ala Gly Asp Ala Pro Ala Ser Ala Glu
            20                  25                  30
Pro Thr Glu Phe Ala Val Ile Leu Glu Asp Val Pro Ser Asp Lys Lys
        35                  40                  45
Ile Gly Val Leu Lys Val Val Arg Glu Val Thr Gly Leu Ala Leu Lys
    50                  55                  60
Glu Ala Lys Glu Met Thr Glu Gly Leu Pro Lys Thr Val Lys Glu Lys
65                  70                  75                  80
Thr Ser Lys Ser Asp Ala Glu Asp Thr Val Lys Lys Leu Gln Glu Ala
                85                  90                  95
Gly Ala Lys Ala Val Ala Lys Gly Leu
            100                 105
<210>118
<211>1258
<212>PRT
<213>Chlamydia trachomatis
<400>118
Ser Leu Arg Arg Ala Arg Met Phe Lys Cys Pro Glu Arg Val Ser Val
 1               5                  10                  15
Lys Lys Lys Glu Asp Ile Leu Asp Leu Pro Asn Leu Val Glu Val Gln
            20                  25                  30
Ile Lys Ser Tyr Lys Gln Phe Leu Gln Ile Gly Lys Leu Ala Glu Glu
        35                  40                  45
Arg Glu Asn Ile Gly Leu Glu Glu Val Phe Arg Glu Ile Phe Pro Ile
    50                  55                  60
Lys Ser Tyr Asn Glu Ala Thr Ile Leu Glu Tyr Leu Ser Tyr Asn Leu
65                  70                  75                  80
Gly Val Pro Lys Tyr Ser Pro Glu Glu Cys Ile Arg Arg Gly Ile Thr
                85                  90                  95
Tyr Ser Val Thr Leu Lys Val Arg Phe Arg Leu Thr Asp Glu Thr Gly
            100                 105                 110
Ile Lys Glu Glu Glu Val Tyr Met Gly Thr Ile Pro Ile Met Thr Asp
        115                 120                 125
Lys Gly Thr Phe Ile Ile Asn Gly Ala Glu Arg Val Val Val Ser Gln
    130                 135                 140
Val His Arg Ser Pro Gly Ile Asn Phe Glu Gln Glu Lys His Ser Lys
145                 150                 155                 160
Gly Asn Val Leu Phe Ser Phe Arg Ile Ile Pro Tyr Arg Gly Ser Trp
                165                 170                 175
Leu Glu Ala Val Phe Asp Ile Asn Asp Leu Ile Tyr Ile His Ile Asp
            180                 185                 190
Arg Lys Lys Arg Arg Arg Lys Ile Leu Ala Met Thr Phe Ile Arg Ala
        195                 200                 205
Leu Gly Tyr Ser Thr Asp Ala Asp Ile Ile Glu Glu Phe Phe Ser Val
    210                 215                 220
Glu Glu Arg Ser Leu Arg Ser Glu Lys Asp Phe Val Ala Leu Val Gly
225                 230                 235                 240
Lys Val Leu Ala Asp Asn Val Val Asp Ala Asp Ser Ser Leu Val Tyr
                245                 250                 255
Gly Lys Ala Gly Glu Lys Leu Ser Thr Ala Met Leu Lys Arg Ile Leu
            260                 265                 270
Asp Thr Gly Val Gln Ser Leu Lys Ile Ala Val Gly Ala Asp Glu Asn
        275                 280                 285
His Pro Ile Ile Lys Met Leu Ala Lys Asp Pro Thr Asp Ser Tyr Glu
    290                 295                 300
Ala Ala Leu Lys Asp Phe Tyr Arg Arg Leu Arg Pro Gly Glu Pro Ala
305                 310                 315                 320
Thr Leu Ala Asn Ala Arg Ser Thr Ile Met Arg Leu Phe Phe Asp Ala
                325                 330                 335
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Lys Arg Tyr Asn Leu Gly Arg Val Gly Arg Tyr Lys Leu Asn Lys Lys
            340                 345                 350
Leu Gly Phe Pro Leu Asp Asp Glu Thr Leu Ser Gln Val Thr Leu Arg
        355                 360                 365
Lys Glu Asp Val Ile Gly Ala Leu Lys Tyr Leu Ile Arg Leu Arg Met
    370                 375                 380
Gly Asp Glu Lys Thr Ser Ile Asp Asp Ile Asp His Leu Ala Asn Arg
385                 390                 395                 400
Arg Val Arg Ser Val Gly Glu Leu Ile Gln Asn His Cys Arg Ser Gly
                405                 410                 415
Leu Ala Arg Met Glu Lys Ile Val Arg Glu Arg Met Asn Leu Phe Asp
            420                 425                 430
Phe Ser Ser Asp Thr Leu Thr Pro Gly Lys Ile Ile Ser Ala Lys Gly
        435                 440                 445
Leu Val Ser Val Leu Lys Asp Phe Phe Ser Arg Ser Gln Leu Ser Gln
    450                 455                 460
Phe Met Asp Gln Thr Asn Pro Val Ala Glu Leu Thr His Lys Arg Arg
465                 470                 475                 480
Leu Ser Ala Leu Gly Pro Gly Gly Leu Asn Arg Glu Arg Ala Gly Phe
                485                 490                 495
Glu Val Arg Asp Val His Ala Ser His Tyr Gly Arg Ile Cys Pro Ile
            500                 505                 510
Glu Thr Pro Glu Gly Pro Asn Ile Gly Leu Ile Thr Ser Leu Ser Ser
        515                 520                 525
Phe Ala Lys Ile Asn Glu Phe Gly Phe Ile Glu Thr Pro Tyr Arg Val
    530                 535                 540
Val Arg Asp Gly Ile Val Thr Asp Glu Ile Glu Tyr Met Thr Ala Asp
545                 550                 555                 560
Val Glu Glu Glu Cys Val Ile Ala Gln Ala Ser Ala Glu Leu Asp Glu
                565                 570                 575
Tyr Asn Met Phe Lys Thr Pro Val Cys Trp Ala Arg Tyr Lys Gly Glu
            580                 585                 590
Ala Phe Glu Ala Asp Thr Ser Thr Val Thr His Met Asp Val Ser Pro
        595                 600                 605
Lys Gln Leu Val Ser Val Val Thr Gly Leu Ile Pro Phe Leu Glu His
    610                 615                 620
Asp Asp Ala Asn Arg Ala Leu Met Gly Ser Asn Met Gln Arg Gln Ala
625                 630                 635                 640
Val Pro Leu Leu Lys Thr Glu Ala Ala Ile Val Gly Thr Gly Leu Glu
                645                 650                 655
Gly Arg Ala Ala Lys Asp Ser Gly Ala Ile Ile Val Ala Gln Glu Asp
            660                 665                 670
Gly Val Val Glu Tyr Val Asp Ser Tyr Glu Ile Val Val Ala Lys Lys
        675                 680                 685
Asn Asn Pro Thr Leu Lys Asp Arg Tyr Gln Leu Lys Lys Phe Leu Arg
    690                 695                 700
Ser Asn Ser Gly Thr Cys Ile Asn Gln Thr Pro Leu Cys Ser Val Gly
705                 710                 715                 720
Asp Val Val Thr His Gly Asp Val Leu Ala Asp Gly Pro Ala Thr Asp
                725                 730                 735
Lys Gly Glu Leu Ala Leu Gly Lys Asn Val Leu Val Ala Phe Met Pro
            740                 745                 750
Trp Tyr Gly Tyr Asn Phe Glu Asp Ala Ile Ile Ile Ser Glu Arg Leu
        755                 760                 765
Ile Lys Gln Asp Ala Tyr Thr Ser Ile Tyr Ile Glu Glu Phe Glu Leu
    770                 775                 780
Thr Ala Arg Asp Thr Lys Leu Gly Lys Glu Glu Ile Thr Arg Asp Ile
785                 790                 795                 800
Pro Asn Val Ser Glu Glu Val Leu Ala Asn Leu Gly Glu Asp Gly Ile
                805                 810                 815
Val Arg Ile Gly Ala Glu Val Lys Pro Gly Asp Ile Leu Val Gly Lys
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820 825 830
Ile Thr Pro Lys Ser Glu Thr Glu Leu Ala Pro Glu Glu Arg Leu Leu
835 840 845
Arg Ala Ile Phe Gly Glu Lys Ala Ala Asp Val Lys Asp Ala Ser Leu
850 855 860
Thr Val Pro Pro Gly Thr Glu Gly Val Val Met Asp Val Lys Val Phe
865 870 875 880
Ser Arg Lys Asp Arg Leu Ser Lys Ser Asp Asp Glu Leu Val Glu Glu
885 890 895
Ala Val His Leu Lys Asp Leu Gln Lys Glu Tyr Lys Ser Gln Leu Ala
900 905 910
Gln Leu Lys Val Glu His Arg Glu Lys Leu Gly Ala Leu Leu Leu Asn
915 920 925
Glu Lys Ala Pro Ala Ala Ile Val His Arg Arg Ser Ala Asp Ile Leu
930 935 940
Val Gln Glu Gly Ala Ile Phe Asp Gln Glu Thr Ile Glu Leu Leu Glu
945 950 955 960
Arg Glu Ser Leu Val Asp Leu Leu Ile Ala Pro Cys Asp Met Tyr Asp
965 970 975
Val Leu Lys Asp Ile Leu Ser Ser Tyr Glu Thr Ala Val Gln Arg Leu
980 985 990
Glu Val Asn Tyr Lys Thr Glu Ala Glu His Ile Lys Glu Gly Asp Ala
995 1000 1005
Asp Leu Asp His Gly Val Ile Arg Gln Val Lys Val Tyr Val Ala Ser
1010 1015 1020
Lys Arg Lys Leu Gln Val Gly Asp Lys Met Ala Gly Arg His Gly Asn
1025 1030 1035 1040
Lys Gly Val Val Ser Lys Ile Val Pro Glu Ala Asp Met Pro Phe Leu
1045 1050 1055
Ala Asn Gly Glu Thr Val Gln Met Ile Leu Asn Pro Leu Gly Val Pro
1060 1065 1070
Ser Arg Met Asn Leu Gly Gln Val Leu Glu Thr His Leu Gly Tyr Ala
1075 1080 1085
Ala Lys Thr Ala Gly Ile Tyr Val Lys Thr Pro Val Phe Glu Gly Phe
1090 1095 1100
Pro Glu Ser Arg Ile Trp Asp Met Met Ile Glu Gln Gly Leu Pro Glu
1105 1110 1115 1120
Asp Gly Lys Ser Tyr Leu Phe Asp Gly Lys Thr Gly Glu Arg Phe Asp
1125 1130 1135
Ser Lys Val Val Val Gly Tyr Ile Tyr Met Leu Lys Leu Ser His Leu
1140 1145 1150
Ile Ala Asp Lys Ile His Ala Arg Ser Ile Gly Pro Tyr Ser Leu Val
1155 1160 1165
Thr Gln Gln Pro Leu Gly Gly Lys Ala Gln Met Gly Gly Gln Arg Phe
1170 1175 1180
Gly Glu Met Glu Val Trp Ala Leu Glu Ala Tyr Gly Val Ala His Met
1185 1190 1195 1200
Leu Gln Glu Ile Leu Thr Val Lys Ser Asp Asp Val Ser Gly Arg Thr
1205 1210 1215
Arg Ile Tyr Glu Ser Ile Val Lys Gly Glu Asn Leu Leu Arg Ser Gly
1220 1225 1230
Thr Pro Glu Ser Phe Asn Val Leu Ile Lys Glu Met Gln Gly Leu Gly
1235 1240 1245
Leu Asp Val Arg Pro Met Val Val Asp Ala
1250 1255
<210>119
<211>1396
<212>PRT
<213>Chlamydia trachomatis
<400>119
Met Phe Arg Glu Gly Ser Arg Asp Asp Ala Ala Leu Val Lys Glu Gly

```
  1               5                  10                  15
Leu Phe Asp Lys Leu Glu Ile Gly Ile Ala Ser Asp Val Thr Ile Arg
            20                  25                  30
Asp Lys Trp Ser Cys Gly Glu Ile Lys Lys Pro Glu Thr Ile Asn Tyr
        35                  40                  45
Arg Thr Phe Lys Pro Glu Lys Gly Gly Leu Phe Cys Glu Lys Ile Phe
    50                  55                  60
Gly Pro Thr Lys Asp Trp Glu Cys Tyr Cys Gly Lys Tyr Lys Lys Ile
65                  70                  75                  80
Lys His Lys Gly Ile Val Cys Asp Arg Cys Gly Val Glu Val Thr Leu
                85                  90                  95
Ser Lys Val Arg Arg Glu Arg Met Ala His Ile Glu Leu Ala Val Pro
            100                 105                 110
Ile Val His Ile Trp Phe Phe Lys Thr Thr Pro Ser Arg Ile Gly Asn
        115                 120                 125
Val Leu Gly Met Thr Ala Ser Asp Leu Glu Arg Val Ile Tyr Tyr Glu
    130                 135                 140
Glu Tyr Val Val Ile Asp Pro Gly Asn Thr Asp Leu Val Lys Lys Gln
145                 150                 155                 160
Leu Leu Asn Asp Ala Lys Tyr Arg Glu Val Val Glu Lys Trp Gly Lys
                165                 170                 175
Asp Ala Phe Val Ala Lys Met Gly Gly Glu Ala Val Tyr Asp Leu Leu
            180                 185                 190
Lys Ser Glu Asp Leu Glu Ser Leu Leu Gly Glu Leu Lys Asp Arg Leu
        195                 200                 205
Arg Lys Thr Lys Ser Gln Gln Ala Arg Met Lys Leu Ala Lys Arg Leu
    210                 215                 220
Lys Ile Val Glu Gly Phe Val Ser Ser Ser Asn Arg Pro Glu Trp Met
225                 230                 235                 240
Val Leu Lys Asn Ile Pro Val Val Pro Pro Asp Leu Arg Pro Leu Val
                245                 250                 255
Pro Leu Asp Gly Gly Arg Phe Ala Thr Ser Asp Leu Asn Asp Leu Tyr
            260                 265                 270
Arg Arg Val Ile Asn Arg Asn Asn Arg Leu Lys Ala Ile Leu Arg Leu
        275                 280                 285
Lys Thr Pro Glu Val Ile Val Arg Asn Glu Lys Arg Met Leu Gln Glu
    290                 295                 300
Ala Val Asp Ala Leu Phe Asp Asn Gly Arg His Gly His Pro Val Met
305                 310                 315                 320
Gly Ala Gly Asn Arg Pro Leu Lys Ser Leu Ser Glu Met Leu Lys Gly
                325                 330                 335
Lys Asn Gly Arg Phe Arg Gln Asn Leu Leu Gly Lys Arg Val Asp Tyr
            340                 345                 350
Ser Gly Arg Ser Val Ile Ile Val Gly Pro Glu Leu Lys Phe Asn Gln
        355                 360                 365
Cys Gly Leu Pro Lys Glu Met Ala Leu Glu Leu Phe Glu Pro Phe Ile
    370                 375                 380
Ile Lys Arg Leu Lys Asp Gln Gly Ser Val Tyr Thr Ile Arg Ser Ala
385                 390                 395                 400
Lys Lys Met Ile Gln Arg Gly Ala Pro Glu Val Trp Asp Val Leu Glu
                405                 410                 415
Glu Ile Ile Lys Gly His Pro Val Leu Leu Asn Arg Ala Pro Thr Leu
            420                 425                 430
His Arg Leu Gly Ile Gln Ala Phe Glu Pro Val Leu Ile Glu Gly Lys
        435                 440                 445
Ala Ile Arg Val His Pro Leu Val Cys Ala Ala Phe Asn Ala Asp Phe
    450                 455                 460
Asp Gly Asp Gln Met Ala Val His Val Pro Leu Ser Ile Glu Ala Gln
465                 470                 475                 480
Leu Glu Ala Lys Val Leu Met Met Ala Pro Asp Asn Ile Phe Leu Pro
                485                 490                 495
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Substitute Page

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Ser Ser Gly Lys Pro Val Ala Thr Pro Ser Lys Asp Met Thr Leu Gly
                500                 505                 510
Ile Tyr Tyr Leu Met Ala Asp Pro Thr Tyr Phe Pro Glu Glu His Gly
            515                 520                 525
Gly Lys Thr Lys Ala Phe Lys Asp Glu Val Glu Val Leu Arg Ala Leu
        530                 535                 540
Asn Ala Gly Gly Phe Ile Leu Lys Asp Glu Ile Cys Gly Ser Arg Arg
545                 550                 555                 560
Asp Glu Thr Gly Arg Gly Ile His Ile His Glu Lys Ile Lys Val Arg
                565                 570                 575
Ile Asp Gly Gln Ile Ile Glu Thr Thr Pro Gly Arg Val Phe Phe Asn
            580                 585                 590
Thr Ile Val Pro Lys Glu Leu Gly Phe Gln Asn Tyr Ser Met Pro Ser
        595                 600                 605
Lys Arg Ile Ser Glu Leu Ile Leu Gln Cys Tyr Lys Lys Val Gly Leu
    610                 615                 620
Glu Ala Thr Val Arg Phe Leu Asp Asp Leu Lys Glu Leu Gly Phe Val
625                 630                 635                 640
Gln Ser Thr Lys Ala Ala Ile Ser Met Gly Leu Lys Asp Val Lys Ile
                645                 650                 655
Pro Glu Ile Lys Lys Glu Ile Leu Lys Asp Ala Tyr Asp Lys Val Ala
            660                 665                 670
Ile Val Lys Lys Gln Tyr Glu Asp Gly Ile Ile Thr Asp Gly Glu Arg
        675                 680                 685
His Ser Lys Thr Ile Ser Ile Trp Thr Glu Val Ser Asp Leu Leu Ser
    690                 695                 700
Asn Ala Leu Tyr Ser Glu Ile Lys Lys Gln Thr Asn Ser Lys His Asn
705                 710                 715                 720
Pro Leu Phe Leu Met Val Xaa Ser Gly Ala Arg Gly Asn Lys Ser Gln
                725                 730                 735
Leu Lys Gln Leu Gly Ala Leu Arg Gly Leu Met Ala Lys Pro Asn Gly
            740                 745                 750
Ala Ile Ile Glu Ser Pro Ile Thr Ser Asn Phe Arg Glu Gly Leu Thr
        755                 760                 765
Val Leu Glu Tyr Ser Ile Ser Ser His Gly Ala Arg Lys Gly Leu Ala
    770                 775                 780
Asp Thr Ala His Lys Thr Ala Asp Ser Gly Tyr Leu Thr Arg Arg Leu
785                 790                 795                 800
Val Asp Val Ala Gln Asp Val Ile Ile Thr Glu Arg Asp Cys Gly Thr
                805                 810                 815
Leu Asn His Ile Glu Val Ser Thr Ile Arg Gln Gly Ser Glu Glu Leu
            820                 825                 830
Leu Pro Leu Lys Asp Arg Val Tyr Gly Arg Thr Val Ser Glu Asn Ile
        835                 840                 845
Tyr Gln Pro Gly Asp Lys Ser Asn Val Leu Ala Tyr Ala Gly Asp Val
    850                 855                 860
Leu Thr Ser Ala Gln Ala Glu Ala Ile Asp Asp Ala Gly Ile Glu Ser
865                 870                 875                 880
Val Lys Ile Arg Ser Thr Leu Thr Cys Glu Ser Arg Arg Gly Val Cys
                885                 890                 895
Ala Lys Cys Tyr Gly Leu Asn Leu Ala Asn Gly His Leu Ile Gly Leu
            900                 905                 910
Gly Glu Ala Val Gly Ile Ile Ala Ala Gln Ser Ile Gly Glu Pro Gly
        915                 920                 925
Thr Gln Leu Thr Met Arg Thr Phe His Leu Gly Gly Val Ala Ala Thr
    930                 935                 940
Ser Ser Thr Pro Glu Ile Val Ala Glu Cys Asp Gly Ile Leu Val Tyr
945                 950                 955                 960
Leu Asp Leu Arg Val Val Val Asp Gln Glu Gly Asn Asn Leu Val Leu
                965                 970                 975
Asn Lys Met Gly Ala Leu His Leu Val Gln Asp Glu Gly Arg Ser Leu
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980 985 990
Ser Glu Tyr Lys Lys Leu Leu Ser Thr Lys Ser Ile Glu Ser Leu Ala
995 1000 1005
Thr Phe Pro Val Glu Leu Gly Ala Lys Ile Leu Val Asn Asp Gly Ala
1010 1015 1020
Ala Val Thr Ala Gly Gln Arg Ile Ala Glu Val Glu Leu His Asn Ile
1025 1030 1035 1040
Pro Ile Ile Cys Asp Lys Pro Gly Phe Val His Tyr Glu Asp Leu Val
1045 1050 1055
Glu Gly Val Ser Thr Glu Lys Val Ala Asn Lys Asn Thr Gly Leu Val
1060 1065 1070
Glu Leu Ile Val Lys Gln His Arg Gly Glu Leu His Pro Gln Ile Ala
1075 1080 1085
Ile Tyr Ala Asp Ala Asn Met Lys Glu Leu Val Gly Thr Tyr Ala Ile
1090 1095 1100
Pro Ser Gly Ala Ile Ile Ser Val Glu Glu Gly Gln Arg Ile Ala Pro
1105 1110 1115 1120
Gly Met Leu Leu Ala Arg Leu Pro Arg Gly Ala Ile Lys Thr Lys Asp
1125 1130 1135
Ile Thr Gly Gly Leu Pro Arg Val Ala Glu Leu Val Glu Ala Arg Lys
1140 1145 1150
Pro Glu Asp Ala Ala Asp Ile Ala Lys Ile Asp Gly Val Val Asp Phe
1155 1160 1165
Lys Gly Ile Gln Lys Asn Lys Arg Ile Leu Val Val Arg Asp Glu Ile
1170 1175 1180
Thr Gly Met Glu Glu Glu His Leu Ile Ser Leu Thr Lys His Leu Ile
1185 1190 1195 1200
Val Gln Arg Gly Asp Ser Val Ile Lys Gly Gln Gln Leu Thr Asp Gly
1205 1210 1215
Leu Val Val Pro His Glu Ile Leu Ala Ile Cys Gly Val Arg Glu Leu
1220 1225 1230
Gln Lys Tyr Leu Val Asn Glu Val Gln Glu Val Tyr Arg Leu Gln Gly
1235 1240 1245
Val Asp Ile Asn Asp Lys His Ile Glu Ile Ile Val Arg Gln Met Leu
1250 1255 1260
Gln Lys Val Arg Ile Thr Asp Pro Gly Asp Thr Thr Leu Leu Phe Gly
1265 1270 1275 1280
Glu Asp Val Asp Lys Lys Glu Phe Tyr Glu Glu Asn Arg Arg Thr Glu
1285 1290 1295
Glu Asp Gly Gly Lys Pro Ala Gln Ala Val Pro Val Leu Leu Gly Ile
1300 1305 1310
Thr Lys Ala Ser Leu Gly Thr Glu Ser Phe Ile Ser Ala Ala Ser Phe
1315 1320 1325
Gln Asp Thr Thr Arg Val Leu Thr Asp Ala Ala Cys Ser Ser Lys Thr
1330 1335 1340
Asp Tyr Leu Leu Gly Phe Lys Glu Asn Val Ile Met Gly His Met Ile
1345 1350 1355 1360
Pro Gly Gly Thr Gly Phe Asp Thr His Lys Arg Ile Lys Gln His Leu
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Glu Lys Glu Gln Glu Asp Leu Val Phe Asp Phe Asp Ser Glu Phe Glu
1380 1385 1390
Ser Val Ala Gly
1395

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Asp Lys Val Phe Met Ser Ser Gln Phe Asp Gln Phe Lys Leu Trp Ser

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            20                  25                  30
Val Leu Val Gly Asp Thr Gly Asp Pro Ala Leu Ile Lys Thr Leu Gly
        35                  40                  45
Val Gln Asp Ala Thr Thr Asn Pro Ser Leu Ile Leu Lys Val Ala Gln
    50                  55                  60
Glu Pro Lys Tyr Gln Ser Met Leu Thr Glu Ala Ile Ser Trp Gly Ile
65                  70                  75                  80
Arg Gln Asn Gly Asp Asp Val Gln Thr Leu Thr Phe Val Leu Asp Lys
                85                  90                  95
Ile Gln Val Asn Leu Gly Leu Glu Ile Leu Lys His Val Pro Gly Arg
            100                 105                 110
Val Ser Leu Glu Ile Asp Ala Arg Leu Ser Phe Asn Thr Glu Ala Met
        115                 120                 125
Val Gln Arg Ala Ile Phe Leu Ser Gln Leu Phe Glu Lys Met Gly Gly
    130                 135                 140
Asp Lys Lys Arg Leu Leu Val Lys Ile Pro Gly Thr Trp Glu Gly Ile
145                 150                 155                 160
Cys Ala Ala Glu Val Leu Glu Ser Gln Gly Ile Ala Cys Asn Val Thr
                165                 170                 175
Leu Ile Phe Asn Leu Val Gln Ala Ile Ala Ala Ala Lys Ala Lys Val
            180                 185                 190
Thr Leu Val Ser Pro Phe Val Gly Arg Ile Tyr Asp Trp Trp Ile Ala
        195                 200                 205
Ala Tyr Gly Ala Glu Gly Tyr Ser Ile Glu Ala Asp Pro Gly Val Ala
    210                 215                 220
Ser Val Ala Asn Ile Tyr Ser Tyr Tyr Lys Lys Phe Asp Ile Pro Thr
225                 230                 235                 240
Gln Ile Met Ala Ala Ser Phe Arg Thr Lys Glu Gln Val Leu Ala Leu
                245                 250                 255
Ala Gly Cys Asp Phe Leu Thr Val Ser Pro Lys Leu Leu Glu Glu Leu
            260                 265                 270
Lys Lys Asp Gln Gln Pro Val Glu Arg Lys Leu Ser Val Glu Glu Ala
        275                 280                 285
Lys Lys Ile Arg Tyr Ser Thr Cys Gly Val Val Arg Glu Cys Ile Ser
    290                 295                 300
Val Leu Asn Glu
305
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<212>PRT
<213>Chlamydia trachomatis
<400>121
Lys Asn Ser Arg Lys Ile Ser Ser Leu Leu Lys Glu Ser Leu Ala Trp
  1               5                  10                  15
Lys Lys Arg Lys Lys Leu Asp Ile Gln Pro Val Glu Leu Ser Glu Ser
            20                  25                  30
Val Phe Arg Phe Leu Met Asn Glu Asp Ala Met Ala Thr Glu Lys Leu
        35                  40                  45
Ala Glu Gly Ile Arg Ile Phe Ser Gly Asp Thr Gln Ile Leu Glu Ser
    50                  55                  60
Ala Val Thr Glu Phe Ile Arg Gln Ile Ala Ala Gln Glu Ala
65                  70                  75
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<213>Chlamydia trachomatis
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Asn Gln Thr Leu Asn Leu Met Lys Arg Val Ile Leu Cys Ser Leu Leu
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Phe Ala Ser Phe Pro Ile Val Ser Lys Ala Ala Ala Glu Gly Lys Pro
            20                  25                  30
```

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```
Leu Ser Arg Ala Ala Gln Leu Arg Glu Lys Arg Lys Asp Leu His Val
          35                  40                  45
Ser Arg Lys Pro Ser Pro Arg Tyr Ala Leu Lys Lys Arg Ala Leu Glu
      50                  55                  60
Ala Lys Lys Asn Arg Pro Ser Ile Ser Trp Ile Thr Tyr Ser Asn Ala
 65                  70                  75                  80
Thr Tyr Ser Phe Leu Ile Pro Asn Thr Trp Gln Cys Ile Asp Asp Lys
                 85                  90                  95
Thr Gln Leu Pro Glu Lys Leu Asp Val Leu Phe Ile Gly Lys Gly Ala
            100                 105                 110
Gly Gly Leu Thr Pro Thr Ile Asn Ser Ala His Glu Ile Ile His Lys
        115                 120                 125
Thr Glu Asp Ala Tyr Ile Glu Glu Ile Leu Asp Tyr His Arg Ala Asn
    130                 135                 140
Glu Asn Thr Leu Glu Ser Ser Ile Phe Ala His Ile Gln Ala Pro Ser
145                 150                 155                 160
Gly Lys Phe Thr Ile Ile Lys Thr Glu Lys Asn Thr Ser Trp Gly Arg
                165                 170                 175
Val Phe Cys Leu Gln Gly Val Thr Val Ile Asp His Thr Ala Tyr Ile
            180                 185                 190
Phe Thr Ser Thr Ser Thr Ile Asp Asp Tyr Pro Asn Val Ser Leu Ala
        195                 200                 205
Leu Leu Lys Ala Ala Ser Ser Phe Lys Leu Ser Glu Lys Glu Glu Ala
    210                 215                 220
Ala Arg Gly Asp Ala Ile Leu Glu Lys Ala Leu Lys Asp Leu Gln Asn
225                 230                 235                 240
Gly Lys

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<212>PRT
<213>Chlamydia trachomatis
<400>123
Thr Leu Phe Phe Leu Val Ser Asp Met Ala Asp Leu Ser Ala Gln Asp
  1               5                  10                  15
Lys Leu Lys Gln Ile Cys Asp Ala Leu Arg Glu Glu Thr Leu Lys Pro
             20                  25                  30
Ala Glu Glu Glu Ala Gly Ser Ile Val His Asn Ala Arg Glu Gln Ala
         35                  40                  45
Lys Arg Ile Val Glu Glu Ala Lys Glu Glu Ala Gln Arg Ile Ile Arg
     50                  55                  60
Ser Ala Glu Glu Thr Ala Asp Gln Thr Leu Lys Lys Gly Glu Ala Ala
 65                  70                  75                  80
Leu Val Gln Ala Gly Lys Arg Ser Leu Glu Asn Leu Lys Gln Ala Val
                 85                  90                  95
Glu Thr Lys Ile Phe Arg Glu Ser Leu Gly Glu Trp Leu Asp His Val
            100                 105                 110
Ala Thr Asp Pro Glu Val Ser Ala Lys Leu Val Gln Ala Leu Val Gln
        115                 120                 125
Ala Val Asp Ala Gln Gly Ile Ser Gly Asn Leu Ser Ala Tyr Ile Gly
    130                 135                 140
Lys His Val Ser Ala Arg Ala Val Asn Glu Ala Leu Gly Lys Glu Ile
145                 150                 155                 160
Thr Ser Lys Leu Lys Glu Lys Gly Val Ser Val Gly Lys Phe Ser Gly
                165                 170                 175
Gly Ala Gln Leu Lys Val Glu Glu Arg Asn Trp Val Leu Asp Met Ser
            180                 185                 190
Ser Glu Val Leu Leu Asp Phe Ile Asp
        195                 200
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Sequence Listing

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<213>Chlamydia trachomatis
<400>124

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Glu Arg Val Met Asn Gln Tyr Tyr Phe Leu Ser Ser Phe Leu Ser Pro
  1               5                  10                  15
Gln Gln Pro Glu Ser Ser Pro Leu Tyr Ser Phe Gln Glu Ile Asn Asp
            20                  25                  30
Leu Leu Ala Leu Asn Phe Thr Asp Lys Asp Trp Arg Ser Tyr Val Ile
        35                  40                  45
Leu Arg Arg Phe Phe Asp Leu Glu Asn Phe Ala Phe Phe Trp Ala Gly
    50                  55                  60
Lys Ser Ile Pro Phe Ser Phe Gly Thr Val Thr Asn Ser Asn Val Glu
65                  70                  75                  80
Ser Leu Leu Arg Leu Gln Met Trp Ser Asp Glu Trp Glu Phe Glu Asp
                85                  90                  95
Phe Phe Lys Asp Phe Leu Leu Arg Tyr Lys Thr Pro Arg Glu Arg Leu
            100                 105                 110
Thr His Phe Ser Glu Leu Val Arg Asp Phe Leu Asp His Tyr Gln Asp
        115                 120                 125
Tyr Pro Ser Glu Phe Leu Arg Thr Tyr Phe Arg Phe Lys Gln Asp Leu
    130                 135                 140
Arg Ile Ile Leu Ala Gly Phe Arg Ala Arg Val Met Gln Lys Asp Val
145                 150                 155                 160
Ser Phe Val Leu Arg Asp Glu Asp Ser Ser Asn Pro Ile Val Leu His
                165                 170                 175
Val Leu Met Gln Lys Asp Ser Pro Asn Tyr Glu Leu Pro Asp Glu Phe
            180                 185                 190
Phe Glu Leu Arg Asp Val Leu Gly Arg Leu Arg Ala Ser Ser Thr His
        195                 200                 205
Val Glu Ser Asp Ser Leu Phe Leu
    210                 215
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<213>Chlamydia trachomatis
<400>125

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Gly Tyr Val Val Glu Ala Tyr Gly Asn Leu Leu Arg Val His Val Asp
            20                  25                  30
Gly His Val Arg Gln Gly Glu Val Ala Tyr Val Ser Val Asp Asn Thr
        35                  40                  45
Trp Leu Lys Ala Glu Ile Ile Glu Val Val Gly Met Lys Leu Arg Phe
    50                  55                  60
Gln Val Phe Glu Glu Thr Gln Gly Ile Ser Arg Gly Ala Leu Val Thr
65                  70                  75                  80
Phe Ser Gly His Leu Leu Glu Ala Glu Leu Gly Pro Gly Leu Leu Gln
                85                  90                  95
Gly Ile Phe Asp Gly Leu Gln Asn Arg Leu Glu Ile Leu Ala Asp Thr
            100                 105                 110
Ser Leu Phe Leu Arg Arg Gly Glu Tyr Val Asn Ala Ile Cys Arg Glu
        115                 120                 125
Thr Val Trp Ala Tyr Thr Gln Lys Ala Ser Val Gly Ser Val Leu Ser
    130                 135                 140
Arg Gly Asp Val Leu Gly Thr Val Lys Glu Gly Arg Phe Asp His Lys
145                 150                 155                 160
Ile Met Val Pro Phe Ser Cys Phe Glu Glu Val Thr Ile Thr Trp Val
                165                 170                 175
Ile Ser Ser Gly Asn Tyr Thr Val Asp Thr Val Val Ala Lys Gly Arg
            180                 185                 190
Thr Ser Thr Gly Glu Glu Leu Glu Phe Thr Met Val Gln Lys Trp Pro
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        195                 200                 205
Ile Lys Gln Ala Phe Leu Glu Gly Glu Lys Val Pro Ser His Glu Ile
    210                 215                 220
Met Asp Val Gly Leu Arg Val Leu Asp Thr Gln Ile Pro Val Leu Lys
225                 230                 235                 240
Gly Gly Thr Phe Cys Thr Pro Gly Pro Phe Gly Ala Gly Lys Thr Val
                245                 250                 255
Leu Gln His His Leu Ser Lys Tyr Ala Ala Val Asp Ile Val Val Leu
            260                 265                 270
Cys Ala Cys Gly Glu Arg Ala Gly Glu Val Val Glu Ile Leu Gln Glu
        275                 280                 285
Phe Pro His Leu Lys Asp Pro His Thr Gly Gln Ser Leu Met His Arg
    290                 295                 300
Thr Cys Ile Ile Cys Asn Thr Ser Ser Met Pro Val Ala Ala Arg Glu
305                 310                 315                 320
Ser Ser Ile Tyr Leu Gly Ile Thr Ile Ala Glu Tyr Tyr Arg Gln Met
                325                 330                 335
Gly Leu His Ile Leu Leu Leu Ala Asp Ser Thr Ser Arg Trp Ala Gln
            340                 345                 350
Ala Leu Arg Glu Ile Ser Gly Arg Leu Glu Glu Ile Pro Gly Glu Glu
        355                 360                 365
Ala Phe Pro Ala Tyr Leu Ala Ser Arg Ile Ala Ala Phe Tyr Glu Arg
    370                 375                 380
Gly Gly Ala Val Lys Met Lys Asp Gly Ser Glu Gly Ser Leu Thr Ile
385                 390                 395                 400
Cys Gly Ala Val Ser Pro Ala Gly Gly Asn Phe Glu Glu Pro Val Thr
                405                 410                 415
Gln Ala Thr Leu Ser Val Val Gly Ala Phe Cys Gly Leu Ser Lys Ala
            420                 425                 430
Arg Ala Asp Ala Arg Arg Tyr Pro Ser Ile Asp Pro Met Ile Ser Trp
        435                 440                 445
Ser Lys Tyr Leu Asp Ser Val Ala Glu Ile Leu Glu Lys Lys Val Pro
    450                 455                 460
Gly Trp Gly Glu Ser Val Lys Gln Ala Ser Arg Phe Leu Glu Glu Gly
465                 470                 475                 480
Ala Glu Ile Gly Lys Arg Ile Glu Val Val Gly Glu Glu Gly Ile Ser
                485                 490                 495
Met Glu Asp Met Glu Ile Phe Leu Lys Ser Glu Leu Tyr Asp Phe Cys
            500                 505                 510
Tyr Leu Gln Gln Asn Ala Phe Asp Ala Glu Asp Cys Tyr Cys Pro Phe
        515                 520                 525
Asp Arg Gln Ile Glu Leu Phe Ser Leu Met Asn His Ile Phe Asn Ser
    530                 535                 540
Arg Phe Cys Phe Asp Cys Pro Asp Asn Ala Arg Ser Phe Phe Leu Glu
545                 550                 555                 560
Leu Gln Ser Lys Ile Lys Thr Leu Asn Gly Gln Lys Phe Leu Ser Glu
                565                 570                 575
Glu Tyr Gln Lys Gly Leu Glu Val Ile Tyr Lys Leu Leu Glu Ser Lys
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Met Val Gln Thr Ala
        595
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Thr Val Glu Ala Glu Gly Ala Ser Leu Gly Glu Leu Val Gln Ile Glu
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Arg Ala Asp Gly Arg Ser Ser Tyr Ala Ser Val Leu Arg Phe Asp Ala
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```
          35                  40                  45
Arg Lys Val Thr Leu Gln Val Phe Gly Gly Thr Ser Gly Leu Ser Thr
     50                  55                  60
Gly Asp Lys Val Ile Phe Leu Gly Arg Pro Met Glu Val Ile Tyr Gly
 65                  70                  75                  80
Asp Ser Leu Leu Gly Arg Arg Phe Asn Gly Thr Gly Lys Pro Ile Asp
                 85                  90                  95
His Glu Asp Glu Cys Phe Gly Glu Pro Ile Pro Ile Thr Thr Pro Ser
            100                 105                 110
Phe Asn Pro Val Cys Arg Ile Val Pro Arg Glu Met Val Arg Thr Asn
        115                 120                 125
Ile Pro Met Ile Asp Met Phe Asn Cys Leu Val Lys Ser Gln Lys Ile
    130                 135                 140
Pro Ile Phe Ser Ser Ser Gly Glu Asn His Asn Ala Leu Leu Met Arg
145                 150                 155                 160
Ile Ala Ala Gln Thr Asp Ala Asp Ile Val Ile Ile Gly Gly Met Gly
                165                 170                 175
Leu Thr Phe Val Asp Tyr Asn Phe Phe Val Glu Glu Ser Gln Arg Leu
            180                 185                 190
Gly Phe Ala Asp Lys Cys Val Lys Phe Ile His Lys Ala Val Asp Ala
        195                 200                 205
Pro Val Glu Cys Val Leu Ile Pro Asp Met Ala Leu Ala Cys Ala Glu
    210                 215                 220
Arg Phe Ala Leu Glu Gln Gln Lys Asn Val Leu Val Leu Leu Thr Asp
225                 230                 235                 240
Met Thr Ala Phe Ala Asp Ala Leu Lys Glu Ile Ala Ile Thr Met Asp
                245                 250                 255
Gln Ile Pro Ala Asn Arg Gly Tyr Pro Gly Ser Leu Tyr Ser Asp Leu
            260                 265                 270
Ala Val Arg Tyr Glu Lys Ala Val Asp Ile Ala Gln Gly Gly Ser Ile
        275                 280                 285
Thr Leu Ile Ser Val Thr Thr Met Pro Gly Asp Asp Ile Thr His Pro
    290                 295                 300
Val Pro Asp Asn Thr Gly Phe Ile Thr Glu Gly Gln Phe Tyr Leu Lys
305                 310                 315                 320
Asp Asn Arg Ile Asp Pro Phe Gly Ser Leu Ser Arg Leu Lys Gln Leu
                325                 330                 335
Val Ile Gly Lys Lys Thr Arg Glu Asp His Gly Asp Leu Ala Asn Ala
            340                 345                 350
Leu Ile Arg Leu Tyr Ala Asp Ser Arg Lys Ser Ala Glu Arg Met Ser
        355                 360                 365
Met Gly Phe Lys Leu Ser Asn Trp Asp Lys Lys Leu Leu Ala Phe Ser
    370                 375                 380
Glu Leu Phe Glu Ala Arg Leu Met Ser Leu Glu Val Asn Ile Pro Leu
385                 390                 395                 400
Glu Glu Ala Leu Asp Ile Gly Trp Lys Ile Leu Ser Gln Ser Phe His
                405                 410                 415
Ser Glu Glu Val Gly Ile Lys Glu Gln Leu Ile Gln Lys Tyr Trp Pro
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Lys Ala Cys Leu His Lys
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<213>Chlamydia trachomatis
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Ser Met Ser Ser Gln Ile Lys Leu Thr Lys Asn Ser Tyr Arg Ala Glu
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Lys Gln Lys Leu Asn Met Leu Gly Met Tyr Leu Pro Thr Leu Lys Leu
             20                  25                  30
Lys Lys Ala Leu Leu Gln Ala Glu Val Gln Ser Ala Ile Arg Leu Ala
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          35                  40                  45
Ala Glu Ser Thr Ala Thr Asn Glu Gln Ala Arg Asp Arg Met Tyr Ala
      50                  55                  60
Phe Ala Glu Leu Phe Ser Ile Pro Leu Tyr Thr Asp Ala Val Glu Gln
 65                  70                  75                  80
Cys Phe Ser Val Asp Ile Leu Glu Lys Asp Val Glu Asn Ile Ala Gly
                 85                  90                  95
Val Glu Val Pro Leu Leu Lys Arg Val Val Leu Thr Ser Pro Glu Tyr
            100                 105                 110
Ser Leu Leu Asp Thr Pro Ile Trp Leu Asp Ser Leu Leu Ala Ser Val
        115                 120                 125
Lys Glu Tyr Val Val Ser Lys Ile Tyr Ala Glu Asn Ala Gln Glu Arg
    130                 135                 140
Leu Leu Leu Leu Glu Glu Glu Leu Arg Arg Val Ser Ile Arg Val Asn
145                 150                 155                 160
Leu Phe Glu Lys Lys Leu Ile Pro Thr Thr Ser Gln Thr Leu Lys Lys
                165                 170                 175
Ile Ala Ile Phe Leu Ser Asp Arg Ser Ile Thr Asp Val Gly Gln Met
            180                 185                 190
Lys Met Ala Lys Lys Lys Ile Gln Gln His Lys Glu
        195                 200
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<212>PRT
<213>Chlamydia trachomatis
<400>128
Ser Thr Lys Ser Gly Tyr Leu Val Thr Glu Gln Leu Leu Gln Glu Ile
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Phe Asp Leu Asn Gln Glu Ile Thr Thr Leu Thr Glu Ser Leu Lys Ala
             20                  25                  30
Leu Gly Lys Xaa Ile Val Arg Val Lys Pro Leu Gly Asp Phe Ser Ser
         35                  40                  45
Glu Glu Ile Arg Glu Leu Thr Leu Lys Thr Gly Leu Ala Val Arg Phe
     50                  55                  60
Phe Tyr Lys Arg His Ile Glu Gly Ala Pro Leu Glu Val Glu Glu Glu
 65                  70                  75                  80
Asn Val Phe Tyr Leu Ala Thr Ala Tyr Asn Tyr Asp Tyr Tyr Ala Val
                 85                  90                  95
Ile Gly Ile Val Ser Leu Ser Lys Asp Ile Phe Thr Glu Ile Glu Ala
            100                 105                 110
Pro Arg Ser Val Asn Glu Leu Arg Glu Glu Ala Gly His Leu Gln Ala
        115                 120                 125
Leu Leu Arg Lys Lys Lys Ala Arg Val Cys Glu Leu Tyr Ala Tyr Arg
    130                 135                 140
Glu Asp Leu Leu Glu Ala Leu Cys Glu Gln Cys Asn Glu Gln Ser Leu
145                 150                 155                 160
Gln His Ala Glu Ala Ser Ala Glu Asp Leu Phe Asp Asp Lys Val Phe
                165                 170                 175
Ser Ala Leu Gly Trp Val Ile Val Asp Arg Leu Asp Glu Val Lys Lys
            180                 185                 190
Leu Cys Asp Ser Leu Gly Ile Tyr Leu Glu Arg Val Gln Pro Asp Pro
        195                 200                 205
Asp Glu Val Ile Pro Thr Tyr Leu Glu Asn His Gly Leu Gly Ala Leu
    210                 215                 220
Gly Glu Ser Leu Val Asn Ile Tyr Asp Thr Pro Ala Ser Thr Asp Lys
225                 230                 235                 240
Asp Pro Ser Leu Trp Val Phe Phe Ser Phe Phe Val Phe Phe Ser Met
                245                 250                 255
Ile Ile Asn Asp Ala Gly Tyr Gly Leu Val Phe Leu Ala Thr Ser Leu
            260                 265                 270
Phe Leu Ser Phe Lys Ala Arg Lys Gln Ile Lys Arg Ser Ile Ala Leu
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        275                 280                 285
Lys Arg Phe Leu Gln Met Phe Met Ile Leu Gly Leu Gly Cys Val Cys
    290                 295                 300
Trp Gly Gly Ala Thr Thr Ser Phe Phe Gly Val Ser Val Ser Tyr Thr
305                 310                 315                 320
Ser Pro Phe Arg Glu Tyr Ser Leu Thr His Phe Leu Ala Leu Lys Lys
                325                 330                 335
Ala Glu Tyr Tyr Leu Lys Glu Arg Pro Lys Gly Tyr Lys Glu Leu Val
            340                 345                 350
His Asp Tyr Pro Ile Leu Lys Glu Lys Lys Thr Pro Lys Glu Phe Leu
        355                 360                 365
Leu Ala Gln Ser Thr Ser Ser Gly Asp Ser Val Tyr Lys Ala Val Val
    370                 375                 380
Tyr Asp Lys Phe Ile Asp Asn Ile Leu Met Glu Ile Ala Leu Leu Val
385                 390                 395                 400
Gly Val Val His Leu Ser Leu Gly Met Leu Arg Tyr Cys Arg Gln Arg
                405                 410                 415
Tyr Ser Ser Ile Gly Trp Val Ile Phe Met Cys Gly Asp Ile Cys Ile
            420                 425                 430
Cys Leu Ser Ile Cys Lys Pro Tyr Leu
        435                 440
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<213>Chlamydia trachomatis
<400>129
Thr Ala Val Phe Phe Tyr Arg Met Gly Asn Leu Tyr Val Arg Arg Tyr
  1                 5                  10                  15
Met Tyr Leu Pro Ile Tyr Leu Gln Ala Val Ser Leu Ile His Tyr Ala
            20                  25                  30
Leu His Ile Pro Tyr Glu Leu Gly Gly Leu Val Gly Tyr Tyr Val Thr
        35                  40                  45
Phe Ile Gly Leu Gly Val Ala Ile Leu Gly Gly Val Ile Gln Arg Gly
    50                  55                  60
Leu Arg Gly Leu Asp Glu Ile Thr Ala Val Ile Gln Val Phe Ser Asp
65                  70                  75                  80
Val Leu Ser Tyr Leu Arg Leu Tyr Ala Leu Ser Leu Ala Gly Glu Met
                85                  90                  95
Val Gly Asn Thr Val Met Val Met Ser Glu Arg Phe Ser Pro Ala Val
            100                 105                 110
Gly Ile Leu Ile Ile Ile Phe Gly His Thr Val Asn Ile Ala Leu Ser
        115                 120                 125
Ile Met Gly Gly Val Ile His Gly Leu Arg Leu Asn Phe Ile Glu Trp
    130                 135                 140
Tyr His Tyr Ser Phe Asp Gly Gly Gly Lys Phe Leu His Pro Leu Lys
145                 150                 155                 160
Lys Val Ile Tyr Gln Lys Ser Gln Asn Leu
                165                 170
<210>130
<211>125
<212>PRT
<213>Chlamydia trachomatis
<400>130
Glu Met Ser Ser Glu Arg Lys Tyr Met Ile Asp Val Ser Val Val Gly
  1                 5                  10                  15
Pro Val Leu Ala Met Ala Leu Ala Met Ile Gly Ser Ala Val Gly Cys
            20                  25                  30
Gly Met Ala Gly Val Ala Ser His Ala Val Met Ser Arg Ile Asp Glu
        35                  40                  45
Gly His Gly Lys Ile Ile Gly Leu Ser Ala Met Pro Ser Ser Gln Ser
    50                  55                  60
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Ile Tyr Gly Leu Ile Phe Met Leu Leu Leu Asn Asp Ala Ile Lys Asp
 65                  70                  75                  80
Gly Lys Val Ser Ala Val Ser Gly Ile Val Met Gly Ile Ala Val Gly
                 85                  90                  95
Ser Ala Leu Leu Leu Ser Ala Phe Met Gln Gly Lys Cys Cys Val Ser
            100                 105                 110
Ala Ile Gln Ala Tyr Ala Arg Ser Ser Ala Asn Ile Trp
        115                 120                 125
<210>131
<211>216
<212>PRT
<213>Chlamydia trachomatis
<400>131
Gly Trp Lys Ser Leu Cys Ser Gln Trp Tyr Arg Asn Gly Tyr Ser Cys
  1                 5                  10                  15
Arg Ile Cys Val Ile Ala Phe Cys Phe Tyr Ala Arg Glu Val Leu Cys
             20                  25                  30
Glu Cys Tyr Ser Ser Leu Cys Ala Phe Leu Cys Lys Tyr Met Val Asn
         35                  40                  45
His Leu Leu Arg Leu Gly Leu Leu Ser Leu Leu Arg Tyr Leu Leu Ser
     50                  55                  60
Phe Leu Arg Tyr Cys Tyr Ser Lys Trp Xaa Ala Ala Ala Phe Ser Ala
 65                  70                  75                  80
Leu Cys Leu Gly Gly Cys Ser Gln Pro Ala Leu Ser Ser Phe Leu Glu
                 85                  90                  95
Phe Ile Asp Asn Asp Tyr Thr Ala Ala Ala His Leu Gly Ile Asp Arg
            100                 105                 110
Gly Cys Val Thr Glu Ser Val Gly Gln Gln Leu Val Val Thr Trp Gly
        115                 120                 125
Leu Pro Ser Arg Phe Arg Asp Ser Leu Pro Met Val Leu His Val Trp
    130                 135                 140
Val Tyr Tyr Gly Asn Gly Glu Ala Ala Lys Phe Ser Tyr Asp Val Gln
145                 150                 155                 160
His Leu Ser Gly Tyr Gln Val Tyr Thr Leu Lys Glu Asn Asp Tyr Gln
                165                 170                 175
Asp Arg Gln Gly Ile Xaa Ser Tyr Lys Val Ser Leu Thr Lys Asp Gly
            180                 185                 190
Lys Glu Ile Leu Ser Arg Ser His His Leu Trp Met Glu Val Ile Ser
        195                 200                 205
Leu Lys Ala Phe Ser Gln Leu Ser
    210                 215
<210>132
<211>939
<212>PRT
<213>Chlamydia trachomatis
<400>132
Met Asn Glu Asp Gln Phe Pro Lys Ala Tyr Asp Pro Lys Ser Ser Glu
  1                 5                  10                  15
Thr Gly Val Tyr Ser Phe Trp Glu Arg Ser Gly Met Phe Val Ala Asn
             20                  25                  30
Ala Ser Ser Glu Lys Pro Ala Tyr Ser Ile Val Met Pro Pro Pro Asn
         35                  40                  45
Val Thr Gly Ile Leu His Met Gly His Ala Leu Val Asn Thr Leu Gln
     50                  55                  60
Asp Thr Leu Ile Arg Tyr Lys Arg Met Gln Gly Phe Glu Val Cys Trp
 65                  70                  75                  80
Val Pro Gly Thr Asp His Ala Gly Ile Ala Thr Gln Thr Val Val Glu
                 85                  90                  95
Arg His Leu Lys Ala Ser Leu Gly Lys Arg Arg Thr Asp Phe Ser Arg
            100                 105                 110
Glu Glu Phe Leu Lys His Val Trp Asp Trp Lys Glu Lys Ser Gln Asn
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        115                 120                 125
Val Ile Leu Ser Gln Leu Arg Gln Leu Gly Cys Ser Cys Asp Trp Ser
    130                 135                 140
Arg Gln Arg Phe Thr Met Asp Pro Gly Ala Asn Arg Ala Val Lys Lys
145                 150                 155                 160
Ala Phe Lys Ile Leu Phe Asp Lys Gly Val Ile Tyr Arg Gly Tyr Tyr
                165                 170                 175
Leu Val Asn Trp Asp Pro Ile Leu Gln Thr Ala Leu Ala Asp Asp Glu
            180                 185                 190
Val Glu Tyr Glu Glu Arg Asp Gly Trp Leu Tyr Tyr Ile Arg Tyr Gln
        195                 200                 205
Val Val Asn Ser Glu Glu Phe Ile Thr Val Ala Thr Thr Arg Pro Glu
    210                 215                 220
Thr Leu Leu Gly Asp Thr Ala Ile Ala Val Ser Pro Glu Asp Gln Arg
225                 230                 235                 240
Tyr Ser His Leu Ile Gly Ala Lys Val Val Val Pro Phe Val Asn Arg
                245                 250                 255
Glu Ile Pro Ile Ile Gly Asp Phe Ser Val Asp Ala Ser Phe Gly Thr
            260                 265                 270
Gly Ala Val Lys Ile Thr Pro Ala His Asp Lys Asp Asp Tyr Lys Thr
        275                 280                 285
Gly Met Asn His Gln Leu Pro Met Ile Asn Ile Leu Thr Ser Thr Gly
    290                 295                 300
Glu Ile Asn Glu Asn Gly Gly Ile Phe Thr Gly Leu Ser Arg Glu Val
305                 310                 315                 320
Ala Arg Glu Asn Ile Ile Thr Ser Leu Glu Ala Leu Gly Leu Phe Val
                325                 330                 335
Lys Lys Glu Ala Tyr Ser Ser Arg Val Gly Val Ser Tyr Arg Ser Gly
            340                 345                 350
Ala Ile Ile Glu Pro Tyr Leu Ser Lys Gln Trp Phe Val Ser Val Asp
        355                 360                 365
Ser Phe Arg Asp Ser Leu Arg Glu Phe Val Asn Ser Glu Glu Ile Arg
    370                 375                 380
Ile Phe Pro Pro Glu Phe Val Arg Asn Tyr Leu Thr Trp Val Asn Asn
385                 390                 395                 400
Leu Lys Asp Trp Cys Ile Ser Arg Gln Leu Trp Trp Gly His Arg Ile
                405                 410                 415
Pro Val Trp His Asn Lys His Asp Glu Asn Val Ile Cys Phe Asp Gly
            420                 425                 430
Glu Gly Gly Pro Glu Glu Val Met Arg Asp Pro Glu Ser Trp Tyr Gln
        435                 440                 445
Asp Pro Asp Val Leu Asp Thr Trp Phe Ser Ser Gly Leu Trp Pro Leu
    450                 455                 460
Thr Cys Phe Gly Trp Pro Asp Glu Asp Ser Leu Asp Leu Lys Lys Phe
465                 470                 475                 480
Tyr Pro Thr Ala Val Leu Val Thr Gly His Asp Ile Leu Phe Phe Trp
                485                 490                 495
Val Thr Arg Met Val Leu Met Cys Ser Ala Met Val Asp Thr Glu Pro
            500                 505                 510
Phe Ser Asp Val Phe Leu His Gly Leu Ile Phe Gly Lys Ser Tyr Arg
        515                 520                 525
Glu Tyr Asp Glu Lys Gly Glu Trp Phe Tyr Val Ser Gly Glu Arg Lys
    530                 535                 540
Arg Asp Tyr Asp Lys Gly Lys Ala Leu Pro Lys Asn Val Val Ala Lys
545                 550                 555                 560
Trp Glu Lys Leu Ser Lys Ser Lys Gly Asn Val Ile Asp Pro Ile Glu
                565                 570                 575
Met Ile Glu Ala Tyr Gly Ala Asp Ala Val Arg Leu Thr Leu Cys Ser
            580                 585                 590
Cys Ala Asn Arg Gly Glu Gln Ile Asp Leu Asp Tyr Arg Leu Phe Glu
        595                 600                 605
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Glu Tyr Lys Asn Phe Ile Asn Lys Leu Trp Asn Gly Ala Arg Phe Ile
610 615 620
Phe Gly His Ile Ser Glu Leu Thr Ser Arg Asp Leu Glu Glu Gly Val
625 630 635 640
Asn Gln Asp Leu Leu Gly Leu Glu Asp Phe Tyr Ile Leu Asp Arg Phe
645 650 655
Asn Glu Leu Leu Asp Leu Ile Asp Gly His Tyr Asn Cys Tyr Ser Phe
660 665 670
Asp Lys Ile Ala Ser Leu Ala Tyr Asp Phe Phe Lys Asn Asp Leu Cys
675 680 685
Ser Thr Tyr Leu Glu Ile Ile Lys Pro Thr Leu Phe Gly Lys Gln Gly
690 695 700
Ser Asp Gln Gln Arg Ala Thr Lys Arg Lys Leu Leu Ala Thr Leu Leu
705 710 715 720
Ile Asn Ile Leu Gly Val Leu His Pro Ile Val Pro Tyr Ile Thr Glu
725 730 735
Thr Leu Phe Gln Lys Leu Lys Ala Thr Leu Gly Thr Val Glu Asn Gly
740 745 750
Lys Gly Asp Ser Val Thr Gly His Ala Val Ser Met Leu Arg Ser Glu
755 760 765
Ala Cys Met Val Ala Glu Tyr Pro Lys Pro Ile His Val Ala Phe Pro
770 775 780
Gln Gly Leu Arg Glu Ser Phe Gly Ile Ala Glu Arg Leu Val Tyr Thr
785 790 795 800
Ile Arg Asn Ile Arg Gly Glu Met Gln Leu Asp Pro Arg Glu Pro Leu
805 810 815
Gln Ala Phe Val Ile Ser Ser Glu Lys Lys Glu Leu Val Asp Val Cys
820 825 830
Ile Pro Ile Met Cys Ala Leu Gly Gly Val Lys Thr Val Glu Gln Leu
835 840 845
Ala Glu Ala Pro Lys Asp Ser Ile Phe Ser Leu Gly Val Val Glu Gly
850 855 860
Ile Gln Val Gly Val Ile Leu Pro Pro Glu His Leu Ala Lys Glu Arg
865 870 875 880
Val Arg Leu Glu Lys Glu Lys Thr Arg Leu Glu Lys Ser Ile Asp Ser
885 890 895
Val Ser Lys Leu Leu Ala Ser Glu Asp Phe Arg Thr Arg Ala Asn Pro
900 905 910
Ser Leu Val Gln Ala Lys Lys Asp Ser Leu Arg Asn Ser Gln Arg Glu
915 920 925
Leu Gln Ser Ile Leu Asp Lys Leu Ala Ser Leu
930 935

<210>133
<211>945
<212>PRT
<213>Chlamydia trachomatis
<400>133

Thr Arg Ile Ala Leu Lys Glu Ala Val Leu Leu Gln Arg Tyr Glu Leu
1 5 10 15
Ile Arg Leu Ile Gly Lys Gly Gly Met Gly Glu Val Tyr Leu Ala His
20 25 30
Asp Lys Ala Cys Ser Arg Arg Val Ala Leu Lys Arg Ile Arg Glu Asp
35 40 45
Leu Ser Gly Asn Ala Leu Leu Arg Lys Arg Phe Leu Arg Glu Ala Lys
50 55 60
Ile Ala Ala Asp Leu Ile His Pro Gly Ile Val Pro Val Tyr Ser Ile
65 70 75 80
Cys Ser Asp Gly Glu Ala Val Tyr Tyr Thr Met Pro Tyr Ile Glu Gly
85 90 95
Phe Ser Leu Lys Ser Leu Leu Lys Ser Val Trp Gln Lys Glu Val Leu
100 105 110

Ser Lys Glu Leu Glu Glu Lys Thr Ser Val Lys Ser Phe Leu Pro Ile
115 120 125
Phe Asp Lys Ile Cys Ala Thr Val Glu Tyr Ile His Ser Lys Gly Val
130 135 140
Leu His Arg Asp Leu Lys Pro Asp Asn Ile Leu Leu Gly Leu Phe Gly
145 150 155 160
Glu Val Val Ile Val Asp Trp Gly Ala Ala Ile Phe Lys His Ala Lys
165 170 175
Glu Leu Lys Leu Glu Gln Asp Asp Glu Ala Ala Val Ser Phe Asp Glu
180 185 190
Arg Asn Ile Cys Tyr Ser Ser Met Thr Ile Pro Gly Lys Ile Val Gly
195 200 205
Thr Pro Asp Tyr Met Ala Pro Glu Ser Leu Leu Gly Val Glu Ala Ser
210 215 220
Glu Lys Thr Asp Ile Tyr Ala Leu Gly Leu Ile Leu Tyr Gln Met Leu
225 230 235 240
Thr Leu Ala Phe Pro Tyr Arg Arg Lys Lys Gly Arg Lys Leu Ser Tyr
245 250 255
Arg Asp Val Val Leu Pro Pro Ile Glu Met Ser Pro Tyr Arg Glu Ile
260 265 270
Pro Pro Ser Leu Ser Gln Ile Ala Met Lys Ala Ile Ala Ile Asn Pro
275 280 285
Ala Asp Arg Phe Ser Ser Ile Gln Glu Leu Arg Gln Ala Leu Gln Pro
290 295 300
Tyr Leu Gln Gly Asp Pro Glu Trp Thr Val Lys Ala Thr Leu Met Ala
305 310 315 320
Lys Glu Lys Ser Cys Trp Lys Tyr Tyr Asp Pro Ile Leu Leu Ser Arg
325 330 335
Tyr Phe Pro Val Leu Ala Ser Ser Pro Ala Gln Trp Tyr Asn Phe Met
340 345 350
Leu Ser Glu Val Glu Ile Ser Ala Ser Thr Arg Val Glu Tyr Thr Val
355 360 365
Thr Lys Ser Ala Val His Glu Gly Met Gly Ile Leu Phe Leu Pro Ser
370 375 380
Lys Glu Ala Glu Arg Gly Glu Phe Tyr Cys Gly Tyr Gly Leu Trp Phe
385 390 395 400
Ser Val Gln Asn His Glu Leu Thr Val Ser Leu Ile Lys Asn Gly Ile
405 410 415
Glu Ile Gln Lys Lys Ser Gln Glu Met Ile Ser Gln Gln Tyr Arg Phe
420 425 430
Ala Ile Leu Ile Glu Lys Ser Asp Asn Arg Ile Ala Val Phe Val Glu
435 440 445
Gln Ala Leu Phe Ile Leu His Ile Asp Tyr Leu Pro Ser Leu Gly Asn
450 455 460
Arg Leu Gly Val Ile Ile Gln Asp Leu Gln Gly Met Ser Asn Ile Ala
465 470 475 480
Ile Ser Glu Ser Ile Gly Ala Leu Arg Val Ser Cys Leu Ala Val Pro
485 490 495
Asp Ala Phe Leu Ser Glu Lys Leu Tyr Asp Gln Ala Ala Ile Phe Tyr
500 505 510
Arg Lys Ile Arg Asp Ser Phe Pro Gly Arg Lys Glu Ser Tyr Glu Ala
515 520 525
Gln Phe Arg Leu Gly Val Thr Leu Leu Thr Gln Ile Glu Glu Gln Gly
530 535 540
Gly Asp Leu Thr Gln Ala Leu Ser Ser Phe Asp Tyr Leu His Gly Gly
545 550 555 560
Ala Gly Ala Pro Leu Glu Tyr Leu Gly Lys Ala Leu Val Tyr Gln Arg
565 570 575
Asn Gly Ser Phe Val Glu Glu Ile Arg Cys Leu Leu Phe Ala Leu Lys
580 585 590
Arg Tyr Ser Gln His Pro Glu Ile Pro Arg Leu Glu Asp His Leu Cys

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595 600 605
Phe Arg Leu Tyr Asp Ser Leu His Lys His Arg Ser Glu Ala Leu Val
610 615 620
Phe Met Leu Leu Ile Leu Trp Ile Ala Pro Glu Lys Ile Ser Val Arg
625 630 635 640
Glu Glu Lys Arg Phe Leu Arg Ile Ile Tyr His Lys Gln Gln Ala Thr
645 650 655
Leu Phe Cys Gln Val Asp Lys Ala Pro Leu Gln Phe Arg Ser Ser Lys
660 665 670
Met Glu Leu Phe Leu Ser Phe Trp Thr Ala Phe Ser Leu Phe Leu Pro
675 680 685
Glu Leu Phe Arg Arg Ala Gly Glu Leu Arg Asp Tyr Gln Ala Leu Ala
690 695 700
Asp Ile Phe Tyr Val Ala Gly Val Ser Gly Asn Arg Glu Ala Phe Met
705 710 715 720
Gln Phe Ser Thr Ala Leu Ala Asn Val Ser Asp Glu Ile Thr Phe Pro
725 730 735
Glu Ser Leu His Asn Gln Lys Val Ala Glu Leu Met Phe Phe Val Lys
740 745 750
Gly Val Glu Ala Leu Arg Asn Lys Asp Tyr Gln Lys Ala Lys Lys Ala
755 760 765
Phe Met Gly Lys Thr Pro Phe Thr Leu Gln Leu Tyr Ala Leu Asp Ile
770 775 780
Phe His Ile Gln Ala Phe Leu Asp Glu Glu Ile Glu Ser Phe Ile Asp
785 790 795 800
Leu Leu Gln Ala Ile Tyr Asp Pro Ala Ser Glu Glu Glu Arg Asp His
805 810 815
Ile Leu Val Tyr Ile Ile Gln Thr His Leu Trp Asn Arg Asp Leu Glu
820 825 830
Arg Ala Tyr Lys Leu Leu Asn Asp Arg Phe Pro Leu Asp Glu Glu Leu
835 840 845
Ala Glu Tyr Ser Glu Ala Phe Ile Leu Trp Gly Cys Tyr Leu Ala Leu
850 855 860
Thr Gly Asp Arg Val Ala Val Lys Ala His Phe Ser Arg Cys Arg Tyr
865 870 875 880
Lys Tyr Gly Lys Ser Ala Leu Ile Gly Lys Cys Val Asp Gly Asp Ile
885 890 895
Phe Asp Tyr Leu Asp Asn Leu Val Trp Trp Glu Lys Lys Met Thr Leu
900 905 910
Phe Gln Ser Tyr Phe Leu Leu Arg Cys Leu Asn Glu Ser Pro Arg Arg
915 920 925
Tyr Glu Lys Tyr Arg Gln Ala Tyr Leu Ser Met Glu Asn Asn Phe Phe
930 935 940
Asp
945
<210>134
<211>133
<212>PRT
<213>Chlamydia trachomatis
<400>134
Pro Pro Leu Gly Asn Gln Ser Val Ile Cys Thr Gly Pro Ile Phe Leu
1 5 10 15
Glu Ile Cys Val Met Ser Ser Ile Ser Ser Pro Gly Asn Ile Gln His
20 25 30
Pro Leu Pro Thr Thr Ala Ala Pro Asn Pro Pro Gln Lys Thr Gly Gly
35 40 45
His Ser Asn Leu Leu Phe Val Leu Ala Leu Leu Pro Val Ile Gly Leu
50 55 60
Gly Val Ala Ile Tyr Leu Cys Ala Arg Arg Ala Asn Tyr Trp Lys Gly
65 70 75 80
Asn Ala Ala Ile Ala Thr Ala Gly Gly Leu Gly Leu Ile Thr Ile Ala

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                85                  90                  95
Ala Ala Leu Met Val Val Ile Thr Pro Ile Ile Phe Cys Leu Arg Tyr
            100                 105                 110
Leu Tyr Gln Leu Leu Cys Gln Leu Pro Ala His Cys Cys Gly Ser Ser
        115                 120                 125
His Gln Ile Glu Ile
    130
<210>135
<211>241
<212>PRT
<213>Chlamydia trachomatis
<400>135
Met Leu Ser Ala Tyr Tyr Asn Asp Pro Phe Leu Ala Asp Phe Cys Leu
  1               5                  10                  15
Gly Asn Ile Pro Leu Arg Leu Ala Ser Arg Gln Ser Ser Leu Ala Val
             20                  25                  30
Leu Gln Ala His Glu Cys Leu Arg Lys Leu Gln Ile Phe Phe Pro Arg
         35                  40                  45
Leu Trp Gly Gln Ile Ile Thr Thr Thr Thr Gln Gly Asp Leu Asp Gln
     50                  55                  60
Glu Thr Pro Leu Cys Ala Val Glu Asn Thr Gly Phe Phe Thr Asp Asp
 65                  70                  75                  80
Val Asp Phe Leu Val Gln Ser Gly Gln Cys Asp Leu Gly Ile His Ser
                85                  90                  95
Ala Lys Asp Leu Pro Glu Asn Pro Lys Ala Thr Val Val Ser Ile Thr
            100                 105                 110
Ala Ser Ile Asp Pro Arg Asp Ile Leu Val Phe His Glu Lys Tyr Leu
        115                 120                 125
Ser Ile Pro Leu Pro Arg Arg Leu Arg Ile Gly Ser Ser Ser Val Arg
    130                 135                 140
Arg Lys Glu Leu Leu Ser Leu Leu Tyr Pro Ser Ala Ile Ile Thr Asp
145                 150                 155                 160
Ile Arg Gly Thr Ile Gln Thr Arg Leu Lys Leu Leu Glu Glu Lys Asn
                165                 170                 175
Phe Asp Ala Ile Val Met Ala Asn Ala Ala Val Ser Arg Leu Gly Leu
            180                 185                 190
Arg Leu Pro Cys Thr Lys Ile Leu Pro Pro Pro Tyr His Pro Leu Gln
        195                 200                 205
Gly Arg Leu Ala Ile Thr Ala Ser Arg His Ile Arg Ser Trp Arg Gly
    210                 215                 220
Leu Phe Leu Thr Cys Gly Ile Thr Glu Asp Val Glu Ile Met Cys Phe
225                 230                 235                 240
Ser

<210>136
<211>487
<212>PRT
<213>Chlamydia trachomatis
<400>136
Met Tyr Lys Ser Leu Leu Met Gly Ile Phe Gly Glu Lys Ala Leu Gln
  1               5                  10                  15
Asp Gln Lys Lys Lys Gln Lys Asn Leu Leu Leu Asn Arg Arg Tyr Gln
             20                  25                  30
His Met Thr Thr Lys Ile Lys Thr Gln Trp Thr Cys Thr Glu Cys Gly
         35                  40                  45
Thr His Ser Pro Lys Trp Leu Gly Gln Cys Ser Gly Cys Leu Gln Trp
     50                  55                  60
Asn Thr Leu Val Glu Glu Arg Thr Ala Pro Lys Leu Asn Thr Ser Ser
 65                  70                  75                  80
Tyr Ser Ser Ser Ser Ser Ile Pro Ile Pro Leu Asn Asn Val Glu Phe
                85                  90                  95
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Gln Glu Glu Ile Arg Ile His Thr Gln Ala Gln Gly Trp Asn Arg Leu
            100                 105                 110
Leu Gly Gly Gly Thr Val Arg Gly Ser Leu Ala Leu Leu Gly Gly Glu
        115                 120                 125
Pro Gly Ile Gly Lys Ser Thr Leu Leu Leu Gln Ile Ser Ser Gln Phe
    130                 135                 140
Ala Ala Ala Gly His Lys Val Leu Tyr Val Cys Gly Glu Glu Ser Val
145                 150                 155                 160
Ser Gln Thr Ser Leu Arg Ala Gln Arg Leu Gln Ile Ser Ser Asn Asn
                165                 170                 175
Ile Phe Leu Phe Pro Glu Thr Asn Leu Glu Asp Ile Lys Gln Gln Ile
            180                 185                 190
Asp Asn Ile Ala Pro Asp Ile Leu Val Ile Asp Ser Ile Gln Ile Ile
        195                 200                 205
Phe Ser Pro Ser Leu Ser Ser Ala Pro Gly Ser Val Ala Gln Val Arg
    210                 215                 220
Glu Thr Thr Ala Glu Leu Met His Ile Ala Lys Gln Lys Gln Ile Thr
225                 230                 235                 240
Thr Phe Ile Ile Gly His Val Thr Lys Ser Gly Glu Ile Ala Gly Pro
                245                 250                 255
Arg Ile Leu Glu His Leu Val Asp Thr Val Leu Tyr Phe Glu Gly Asn
            260                 265                 270
Val His Ala Asn Tyr Arg Met Ile Arg Ser Val Lys Asn Arg Phe Gly
        275                 280                 285
Pro Thr Asn Glu Leu Leu Ile Leu Ser Met His Thr Asp Gly Leu Arg
    290                 295                 300
Glu Val Glu Asn Pro Ser Gly Leu Phe Leu Gln Glu Lys Ile Val Glu
305                 310                 315                 320
Thr Thr Gly Ser Thr Ile Ile Pro Ile Val Glu Gly Ser Glu Thr Leu
                325                 330                 335
Leu Val Glu Val Gln Ala Leu Val Ser Ser Ser Pro Phe Ser Asn Pro
            340                 345                 350
Val Arg Lys Thr Ser Gly Phe Asp Pro Asn Arg Phe Ser Leu Leu Leu
        355                 360                 365
Ala Val Leu Glu Lys Arg Ala Asn Ile Lys Leu Tyr Thr Ser Asp Val
    370                 375                 380
Phe Leu Ser Ile Ala Gly Gly Leu Lys Ile Thr Gln Pro Ser Ala Asp
385                 390                 395                 400
Leu Gly Ala Val Leu Ser Val Val Ser Ser Leu Tyr Asn Arg Tyr Leu
                405                 410                 415
Pro Lys Asn Tyr Thr Tyr Thr Gly Glu Ile Gly Leu Gly Gly Glu Ile
            420                 425                 430
Arg His Val Ser His Met Glu His Arg Ile Lys Glu Ser Ile Ile Met
        435                 440                 445
Gly Phe Lys Gly Ile Val Met Pro Phe Gly Gln Ile Lys Gly Leu Pro
    450                 455                 460
Lys Glu Phe Leu Asp Gln Ile Asp Ile Ile Gly Val Lys Thr Ile Lys
465                 470                 475                 480
Asp Ala Val Arg Leu Leu Gln
                485

<210>137
<211>234
<212>PRT
<213>Chlamydia trachomatis
<400>137
Lys Ile Val Met Gln His Thr Val Asp Ile Gln Ala Ile Glu Ser Lys
  1               5                  10                  15
Leu Asn Phe Thr Phe Ser His Pro Arg Leu Leu Ile Thr Ala Leu Thr
            20                  25                  30
His Pro Ser Tyr Arg Asn Glu Phe Pro Ser Ala Glu Glu Asp Ser Glu
        35                  40                  45
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Arg Leu Glu Phe Leu Gly Asp Ala Val Leu Gly Leu Val Val Thr Glu
     50                  55                  60
His Leu Phe Leu Leu Phe Pro Ala Leu Asn Glu Gly Leu Leu Ser Thr
 65                  70                  75                  80
Thr Arg Ala Ala Leu Val Asn Ala Glu Ala Cys Phe Glu Tyr Thr Gln
                 85                  90                  95
Lys Leu Ser Leu Gly Glu His Leu Leu Ile Gly Arg Gly Glu Lys Met
            100                 105                 110
Gln Ser His Arg Gly Lys Ile Ser Ala Tyr Ala Asn Leu Phe Glu Ala
        115                 120                 125
Ile Leu Gly Ala Val Tyr Leu Asp Gly Gly Leu Ser Pro Ala Arg Gln
    130                 135                 140
Ile Ile Val Pro Leu Leu Pro Asp Lys Glu Ser Ile Leu Pro Leu Met
145                 150                 155                 160
Leu Val Asn Pro Lys Asn Arg Leu Gln Gln Phe Thr Gln Gln Thr Leu
                165                 170                 175
Lys Val Leu Pro Ser Tyr Lys Ala Leu Pro Trp Lys Ser Glu Asp Gly
            180                 185                 190
Ser Pro Gly Tyr His Val Gln Val Phe Val Asn Gly Asp Leu Trp Gly
        195                 200                 205
Glu Gly Phe Ala Gly Ser Lys Lys Glu Ala Glu Lys Leu Ala Ala Lys
    210                 215                 220
Gln Ala Leu Ser Thr His Asp Asn Lys Asn
225                 230
<210>138
<211>157
<212>PRT
<213>Chlamydia trachomatis
<400>138
Val Ser Met Arg Ala Val Leu His Leu Glu His Lys Arg Tyr Phe Gln
  1                 5                  10                  15
Asn His Gly His Ile Leu Phe Glu Gly Leu Ala Pro Val Ser Asp Cys
             20                  25                  30
Lys Gln Leu Glu Ala Glu Leu Lys Leu Phe Leu Lys Glu Val Ala Val
         35                  40                  45
Val Lys Asp Arg His Leu Gln Arg Trp Arg Glu Asn Val His Arg Thr
     50                  55                  60
Leu Pro Gly Val Gln Met Ile Val Lys Arg Val Arg Leu Asp His Leu
 65                  70                  75                  80
Ala Ala Glu Leu Thr His Arg Ser Arg Val Ala Leu Val Arg Asp Leu
                 85                  90                  95
Trp Val Gln Lys Gln Glu Glu Ile Leu Phe Asp Asp Cys Asp Cys Ser
            100                 105                 110
Val Leu Leu Cys Leu Ser Gly Glu Lys Ala Gly Trp Gly Leu Phe Phe
        115                 120                 125
Ser Gly Glu Tyr Pro Gln Asp Val Phe Asp Trp Gly Ala Gly Asp Thr
    130                 135                 140
Ala Ile Ile Leu Arg Phe Ser Ser Ala Gly Phe Pro Asn
145                 150                 155
<210>139
<211>593
<212>PRT
<213>Chlamydia trachomatis
<400>139
Met Glu Ile Pro Arg Arg Lys Ile Glu Gly Met Phe Asp Pro Gln Thr
  1                 5                  10                  15
Ala Lys Asn Ile Leu Ser Trp Leu Glu Asp Val Val Cys Asp His Thr
             20                  25                  30
Ser Val Leu Thr Leu Leu Asp Asn Asp Pro Glu Arg Leu Arg Glu Leu
         35                  40                  45
Phe Ser Glu Thr Leu Thr Phe Gly Thr Ala Gly Leu Arg Gly Leu Met
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     50                  55                  60
Gly Ile Gly Thr Asn Arg Leu Asn Val Phe Thr Ile Arg Arg Ala Thr
 65                  70                  75                  80
Gln Gly Leu Ala Arg Val Leu Lys Arg Arg Tyr Pro Asp Glu Lys Ile
                85                  90                  95
Ser Val Val Ile Gly Tyr Asp Thr Arg His Asp Ser Phe Glu Phe Gly
            100                 105                 110
Gln Glu Thr Ala Lys Val Leu Ala Gly Asn Gly Ile Leu Ala Tyr Leu
        115                 120                 125
Phe Gln Ile Pro Glu Pro Leu Ala Leu Val Ser Tyr Ser Val Arg Glu
    130                 135                 140
Leu Gln Ala Lys Ala Gly Val Met Ile Thr Ala Ser His Asn Pro Pro
145                 150                 155                 160
Ala Tyr Asn Gly Tyr Lys Val Tyr Met Ser Thr Gly Gly Gln Val Leu
                165                 170                 175
Pro Pro Met Asp Gln Glu Ile Met Glu Glu Phe Gln Lys Val Glu Met
            180                 185                 190
Val Ser Ala Val Glu Ser Leu Asp His Pro Tyr Ile Arg Met Ile Gln
        195                 200                 205
Glu Asp Met Glu Asn Tyr Tyr Glu Glu Thr Leu His Lys Leu Gln Leu
    210                 215                 220
Cys Glu Glu Asp Asn Arg Arg His Gly Ser Leu Leu Arg Ile Ser Tyr
225                 230                 235                 240
Ser Pro Leu His Gly Thr Gly Val Thr Met Ile Pro Arg Ile Leu Lys
                245                 250                 255
Asp Trp Gly Phe Ser Ser Val Ser Leu Val Glu Lys Gln Met Val Pro
            260                 265                 270
Asp Gly Asp Phe Pro Thr Val Val Leu Pro Asn Pro Glu Asp Pro Glu
        275                 280                 285
Ala Leu Val Leu Gly Ile Gln Gln Met Val Glu Gln Lys Asp Asp Leu
    290                 295                 300
Phe Ile Ala Thr Asp Pro Asp Ser Asp Arg Ile Gly Val Val Ser Leu
305                 310                 315                 320
Glu Lys Glu Gly Pro Tyr Arg Phe Asn Gly Asn Gln Ile Ala Cys Leu
                325                 330                 335
Leu Ala Ala His Ile Leu Ser Lys Glu Ser Gln Lys Ala Pro Leu Gly
            340                 345                 350
Ala Glu Asp Lys Val Val Lys Ser Leu Val Thr Thr Glu Leu Leu Thr
        355                 360                 365
Ala Ile Ser Glu Ser Tyr Gly Ala Asn Ile Val Asn Val Gly Ala Gly
    370                 375                 380
Phe Lys Tyr Ile Gly Glu Lys Ile Glu Leu Trp Arg Ser Gly Met Glu
385                 390                 395                 400
Arg Phe Ile Phe Gly Ala Glu Glu Ser Tyr Gly Tyr Leu Tyr Gly Ser
                405                 410                 415
Tyr Val Glu Asp Lys Asp Ala Met Ile Ala Ala Val Leu Ile Ser Glu
            420                 425                 430
Ala Ala Leu Gln Gln Lys Ile Arg Gly Cys Thr Leu Arg Asp Ala Leu
        435                 440                 445
Leu Glu Leu Tyr Glu Val Tyr Gly Tyr Tyr Ala Asn Arg Thr Glu Ser
    450                 455                 460
Ile Asp Leu Pro Ile Asp Gln Pro Gln Arg Lys Gln Glu Leu Leu Asp
465                 470                 475                 480
Arg Trp Glu Thr Gln Asp Pro Leu Arg Met Ser Leu Ser Ser Arg Lys
                485                 490                 495
Leu Ile Ala Phe Glu Asn Tyr Asn Thr Gly Glu Gly Arg Asp Leu Val
            500                 505                 510
Thr Asp Ile Thr Tyr Lys Leu Ser Leu Pro Lys Met Ser Met Leu Cys
        515                 520                 525
Phe Tyr Tyr Glu Gly Asp Cys Arg Val Ile Val Arg Pro Ser Gly Thr
    530                 535                 540
```

```
Glu Pro Lys Met Lys Leu Tyr Phe Glu Ile Lys Gln Ser Phe Ser Glu
545                 550                 555                 560
Phe Ser Lys Glu Arg Thr Val Arg Glu Ala Arg Glu Lys Glu Ser Phe
                565                 570                 575
Glu Ala Leu Gln Gln Phe Ile Lys Glu Thr Lys Ser His Leu Phe Tyr
            580                 585                 590
Ser
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<210>140
<211>222
<212>PRT
<213>Chlamydia trachomatis
<400>140

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Lys Ile Glu Lys Val Ala Arg Ile Val Thr Leu Phe Phe Arg Met Ala
  1               5                  10                  15
Met Val Phe Ser Ser Tyr Met Leu Pro Ala Leu Pro Tyr Asp Tyr Asp
             20                  25                  30
Ala Leu Glu Pro Val Ile Ser Ala Glu Ile Met Gln Leu His His Gln
         35                  40                  45
Lys His His Gln Gly Tyr Ile Asn Asn Leu Asn Glu Ala Leu Lys Ser
     50                  55                  60
Leu Asp Val Ala Asn Ala Thr Gln Asp Leu Thr Arg Leu Ile Ala Ile
 65                  70                  75                  80
Asn Pro Ala Leu Arg Phe Asn Gly Gly Gly His Ile Asn His Ser Leu
                85                  90                  95
Phe Trp Glu Met Leu Ala Pro Gln Gly Lys Gly Gly Gly Val Pro Pro
            100                 105                 110
Arg His Glu Leu Leu Lys Leu Ile Glu Lys Phe Trp Gly Ser Phe Asp
        115                 120                 125
Ser Phe Leu Lys Asn Phe Ile Ala Ser Ser Ala Ala Val Gln Gly Ser
    130                 135                 140
Gly Trp Gly Trp Leu Ala Phe Cys Pro Lys Lys Gln Glu Phe Val Val
145                 150                 155                 160
Gln Thr Thr Ala Asn Gln Asp Pro Leu Glu Ala Thr Thr Gly Met Ile
                165                 170                 175
Pro Leu Pro Gly Val Asp Val Trp Glu His Ala Tyr Tyr Leu Gln Tyr
            180                 185                 190
Lys Asn Val Arg Ile Asp Tyr Leu Lys Ser Phe Pro Ser Ile Ile Asn
        195                 200                 205
Trp Asp Tyr Ile Glu Asn Arg Phe Val Glu Met Ser Lys Gln
    210                 215                 220
```

<210>141
<211>312
<212>PRT
<213>Chlamydia trachomatis
<400>141

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Glu Asp Gly Phe Val Arg Leu Phe Ser Tyr Asp Lys Pro Lys Ile Lys
  1               5                  10                  15
Val Gln Lys Ile Lys Ala Asp Gly Phe Ser Gly Trp Leu Lys Cys Thr
             20                  25                  30
His Cys Ser Glu Met Ile His Ala Asn Glu Leu Gly Gln Asn Phe Asn
         35                  40                  45
Cys Cys Pro Lys Cys Ser Tyr His Tyr Arg Ile Ser Val Ser Glu Arg
     50                  55                  60
Ile Ala Leu Leu Ala Asp Lys Asp Ser Trp Asn Pro Leu Phe Ser Asp
 65                  70                  75                  80
Leu Arg Ser Gln Asp Pro Leu Asn Phe Val Asp Thr Asp Thr Tyr Pro
                85                  90                  95
Asn Arg Leu Glu Lys Ala Arg Lys Asp Asn Pro Asp Ser Glu Gly Val
            100                 105                 110
Leu Val Gly Ala Cys Thr Ile Gly Ser Tyr Pro Val Ala Leu Ala Val
```

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        115                 120                 125
Met Asp Phe Ser Phe Met Ala Gly Ser Met Gly Ala Val Val Gly Glu
    130                 135                 140
Lys Leu Thr Arg Leu Ile Glu Lys Ala Ile Asp Ser Arg Leu Pro Val
145                 150                 155                 160
Ile Ile Val Ser Ala Ser Gly Gly Ala Arg Met Gln Glu Ser Val Phe
                165                 170                 175
Ser Leu Met Gln Met Ala Lys Thr Ser Ala Ala Leu Ala Lys Leu His
            180                 185                 190
Glu Ala Lys Leu Pro Tyr Ile Ser Val Leu Thr Asn Pro Thr Ser Gly
        195                 200                 205
Gly Val Thr Ala Ser Phe Ala Ser Leu Gly Asp Val Ile Ile Ala Glu
    210                 215                 220
Pro Lys Ala Leu Ile Cys Phe Ala Gly Pro Arg Val Val Ser Gln Val
225                 230                 235                 240
Ile Gly Glu Asp Leu Pro Glu Gly Ala Gln Lys Ser Glu Phe Leu Leu
                245                 250                 255
Glu His Gly Met Ile Asp Lys Val Val Glu Arg Lys Gln Leu Lys Thr
            260                 265                 270
Thr Leu Glu Ser Leu Leu Ser Phe Phe Ser Cys Gln Ala Tyr Ser Gly
        275                 280                 285
Gly Lys Gly Asn Cys Pro Arg Asp Ile Ser Lys Thr Ile Lys Glu Ile
    290                 295                 300
Phe Leu Leu Thr Asp Asp Asn Lys
305                 310
<210>142
<211>145
<212>PRT
<213>Chlamydia trachomatis
<400>142
Met Lys Phe Phe Cys Lys Leu Glu Ser Gly Ser Ser Leu Pro Glu Tyr
  1                 5                  10                  15
Ala Thr Ser Gly Ala Ser Gly Ala Asp Val Arg Ala Asn Ile Asn Glu
            20                  25                  30
Pro Ile Ala Ile Leu Pro Gly Gln Arg Ala Leu Ile Pro Thr Gly Ile
        35                  40                  45
Ser Val Glu Ile Pro His Gly Tyr Glu Ile Gln Val Arg Ser Arg Ser
    50                  55                  60
Gly Leu Ala Ser Lys Tyr Gly Val Ile Val Leu Gln Ser Pro Gly Thr
65                  70                  75                  80
Val Asp Ala Asp Tyr Arg Gly Glu Ile Arg Val Ile Leu Ala Asn Leu
                85                  90                  95
Gly Glu Xaa Thr Phe Ile Val Glu Pro Gly Met Arg Ile Ala Gln Leu
            100                 105                 110
Val Val Ala Lys Val Glu Gln Val Ser Phe Val Glu Thr Gln Glu Glu
        115                 120                 125
Leu Thr Ala Thr Ala Arg Gly Thr Gly Gly Phe Gly His Thr Gly Glu
    130                 135                 140
Cys
145
<210>143
<211>168
<212>PRT
<213>Chlamydia trachomatis
<400>143
Val Asp Leu Gly Ile Leu Gly Asn Val Lys Met Thr Cys Val Ala Asp
  1                 5                  10                  15
His Lys Gln Ala Val Thr Leu Ser Ser Leu Leu Ser Ser Asp Leu Ile
            20                  25                  30
Thr Phe Leu His Ser Asp Thr Arg Glu Asp Ile Leu Phe Glu Leu Ser
        35                  40                  45
```

Glu Leu Ala Ala Arg Ala Gly Leu Leu Glu Asp Arg Glu Ala Phe Phe
50 55 60
Arg Ala Leu Leu Ala Arg Glu Asn Ile Met Ser Thr Gly Ile Gly Met
65 70 75 80
Gly Val Ala Ile Pro His Gly Lys Ile Asp Gly Ser Ala Asp Phe Phe
85 90 95
Ile Ala Leu Gly Ile His Ser Glu Gly Ile Leu Trp Asp Ala Ile Asp
100 105 110
Gly Leu Ser Val Arg Leu Val Phe Leu Ile Gly Gly Pro Ser Asp Ala
115 120 125
Pro Ser Lys Tyr Leu Lys Leu Leu Ser Ala Leu Thr Gln Ser Leu Arg
130 135 140
Asp Glu Ala Arg Arg Ser Gln Leu Leu Gln Val Gln Thr Val Glu Glu
145 150 155 160
Val Met Ser Val Phe Ser Gly Val
165

<210>144
<211>102
<212>PRT
<213>Chlamydia trachomatis
<400>144
Arg Ser Tyr Glu Cys Phe Phe Arg Ser Leu Val Met Asp Leu Arg Leu
1 5 10 15
Asp Gln Leu Ala Val Leu Leu Asp Val Ala Glu Asp Ser Ile Arg Gln
20 25 30
Trp Val Ser Cys Gly Gly Ile Pro Ser Tyr Thr Ile Asn Asp Glu Leu
35 40 45
Arg Phe Asn Arg Glu Glu Val Glu Asp Trp Leu Ile His Asn His Gly
50 55 60
Val Ile Pro Asp Glu Lys Arg Glu Glu Lys Gly Glu Ser Lys Asp Leu
65 70 75 80
Ser Leu Arg Tyr Ser Leu Tyr Arg Ala Xaa Tyr Xaa Gly Arg Gly Ser
85 90 95
Lys Lys Cys Ser Cys Arg
100

<210>145
<211>174
<212>PRT
<213>Chlamydia trachomatis
<400>145
Met Gly Leu Phe Gln Met Lys Asn Glu Arg Lys Lys Gly Ser Pro Arg
1 5 10 15
Ile Cys His Leu Asp Ile Ala Tyr Ile Glu Leu Phe Ile Xaa Gly Gly
20 25 30
Val Leu Lys Asn Val Leu Val Asp Ser Lys Glu Gly Ala Leu Arg Tyr
35 40 45
Ala Ala His Tyr Ile Ala Asn Lys Phe Glu Leu Asp Pro Val Val Leu
50 55 60
Phe Glu Met Leu Met His Arg Glu Ser Leu Met Ser Thr Gly Ile Gly
65 70 75 80
Glu Gly Ile Ala Leu Pro His Ala Lys Asp Phe Leu Ile Asn Val Gly
85 90 95
Tyr Asp Ile Ile Val Pro Val Phe Leu Ser Gln Ser Ile Glu Tyr Gly
100 105 110
Ala Leu Asp Gly Lys Pro Val Asp Thr Leu Phe Phe Leu Phe Ala Asn
115 120 125
Gln Asp Arg Asn His Leu Asn Leu Val Asn Lys Ile Val His Leu Gly
130 135 140
Met Ser Ile Gln Ala Arg Leu Phe Leu Lys Glu His Pro Asp Gln Pro
145 150 155 160
Gln Leu Leu Ala Phe Val Lys Asn Trp Glu Ala Gln Ile His

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165 170

<210>146
<211>400
<212>PRT
<213>Chlamydia trachomatis
<400>146

Val Ile Asn Lys Lys Arg Ile Val Arg Pro Ser Cys Glu Lys Ser Phe
1 5 10 15
Asn Val Ala Met Val Ile Pro Lys Val Asp Leu Gly Glu Ser Ala Val
20 25 30
Met Leu Gly Tyr Lys Leu Thr Ser Gln Leu Ala Met Leu Ser Ile Leu
35 40 45
Leu Thr Phe Thr His Thr Met Gly His Ala Ser Gln Met Ser Gln Thr
50 55 60
Leu Pro Thr Ile Met Glu Ala Gln Ala Glu Glu Ala Leu Gln Ala Asp
65 70 75 80
Arg Gly Val Ser Gly Gln Ala Leu Lys Lys Leu Arg Lys Lys Arg Cys
85 90 95
Ala Ser Arg Lys Ser Ala Trp Lys Ala Ser Phe Glu Lys Lys Asp Phe
100 105 110
Phe Ser Cys Ile Thr Asn Gly Leu Phe Ser Arg Asn His Glu Gln Arg
115 120 125
Leu Thr Ala Lys Lys Glu Asn Lys Ala Arg Gly Lys Glu Pro Arg Val
130 135 140
Val Val Gln Thr Thr Lys Lys Arg Gln Thr Thr Gln Ser Glu Lys Glu
145 150 155 160
Phe Phe Asp Trp Leu Cys Asn Ser Lys Arg Asp Asp Lys Arg Lys Leu
165 170 175
Leu Lys Lys Lys Pro Val Asn Thr Ser Leu Ala Lys Ser Glu Glu Leu
180 185 190
Ser Pro Lys Glu Ala Ala Ile Ala Ala Ala Arg Ala Ser Leu Ser Pro
195 200 205
Glu Glu Lys Arg Gln Leu Ile Arg Glu Trp Leu Ala Glu Glu Lys Thr
210 215 220
Ala Arg Lys Ser Gly Arg Ala Ala Cys Ala Val Ser Glu Asn Leu Lys
225 230 235 240
Arg Asp Gly Ser Ile Thr Ser Thr Leu Arg Tyr Asp Ala Glu Lys Ala
245 250 255
Leu Thr Thr Arg Val Lys Arg Asn Glu Asn Ser Val Asn Ala Arg Ala
260 265 270
Arg Gln Arg Ala Ala Leu Gln Lys Ala Lys Lys Ala Lys Thr Glu Lys
275 280 285
Pro Glu Ala Asp Glu Lys Ala Ala Glu Ala Val Ala Ala Ala Pro Thr
290 295 300
Lys Gln Ala His Lys Glu Pro Glu Asn Tyr Phe Ala Ala Thr Ala Ser
305 310 315 320
Thr Asn Asn Thr Asn Val Met Ser Tyr Leu Asn Ala His Gln Tyr Arg
325 330 335
Cys Asp Ser Ser Glu Thr Asp Trp Pro Cys Ser Ser Cys Val Thr Lys
340 345 350
Arg Arg Ala Asn Phe Gly Ile Ser Val Cys Thr Met Val Val Thr Val
355 360 365
Ile Ala Met Ile Val Gly Ala Val Ile Ile Ser Asn Ala Thr Asp Ser
370 375 380
Thr Val Ala Gly Ser Ser Gly Thr Gly Gly Gly Gly Ser Thr Gln Pro
385 390 395 400

<210>147
<211>347
<212>PRT
<213>Chlamydia trachomatis
<400>147

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Asp Ala Thr Lys Ile Arg Trp Cys Phe Phe Pro Gln Ser Asn Thr Leu
 1               5                  10                  15
Ser His Ala Ser Arg Thr Leu Tyr Thr Val Leu Lys Val Ala Leu Ser
            20                  25                  30
Leu Gly Val Leu Ala Gly Val Ala Thr Leu Val Val Phe Leu Pro Pro
        35                  40                  45
Ser Leu Pro Phe Ile Ala Val Ile Gly Val Ser Ser Leu Ala Leu Gly
    50                  55                  60
Met Ala Ser Phe Leu Met Ile Arg Gly Ile Lys Tyr Leu Leu Glu His
65                  70                  75                  80
Ser Pro Leu Asn Arg Lys Gln Leu Ala Lys Asp Ile Gln Lys Thr Ile
                85                  90                  95
Ser Pro Asp Val Trp Ala Ser Met Val His Tyr Gln His Gln Leu Leu
            100                 105                 110
Ser His Leu His Glu Thr Leu Leu Asp Glu Ala Ile Thr Ala Arg Trp
        115                 120                 125
Gly Glu Pro Phe Phe Ile Glu His Ala Asn Leu Lys Ala Lys Ile Glu
    130                 135                 140
Asp Leu Thr Lys Gln Tyr Asp Ile Leu Asn Ala Ala Phe Asn Lys Ser
145                 150                 155                 160
Leu Gln Gln Asp Glu Ala Leu Arg Ser Gln Val Glu Lys Arg Ala Tyr
                165                 170                 175
Leu Phe Pro Ile Pro Asn Asn Asp Glu Asn Ala Lys Thr Lys Glu Ser
            180                 185                 190
Gln Leu Leu Asp Ser Glu Asn Asp Ser Asn Ser Glu Phe Gln Glu Ile
        195                 200                 205
Ile Asn Lys Gly Leu Glu Ala Ala Asn Lys Arg Arg Ala Asp Ala Lys
    210                 215                 220
Ser Lys Phe Tyr Thr Glu Asp Glu Thr Ser Asp Lys Lys Phe Ser Ile
225                 230                 235                 240
Trp Lys Pro Thr Lys Asn Leu Ala Leu Glu Asp Leu Trp Arg Val His
                245                 250                 255
Asp Glu Ala Cys Asn Glu Glu Gln Gln Ala Leu Leu Leu Glu Asp Tyr
            260                 265                 270
Met Ser Tyr Lys Thr Ser Glu Cys Gln Ala Ala Leu Gln Lys Val Ser
        275                 280                 285
Gln Glu Leu Lys Ala Ala Gln Lys Ser Phe Pro Val Leu Glu Lys His
    290                 295                 300
Ala Leu Asp Arg Ser Tyr Glu Ser Ser Leu Thr Met Met Asp Leu Ala
305                 310                 315                 320
Arg Ala Asn Gln Glu Thr His Arg Leu Leu Asn Ile Leu Ser Glu Leu
                325                 330                 335
Gln Gln Leu Ala Gln Tyr Leu Leu Asp Asn His
            340                 345
<210>148
<211>222
<212>PRT
<213>Chlamydia trachomatis
<400>148
His Thr Pro Lys Thr Phe Pro Leu Lys Val His His Ser Phe Ser Asp
 1               5                  10                  15
Lys His Pro Gln Ile Ala Lys Ala Met Trp Ile Thr Gly Ile Ala Leu
            20                  25                  30
Ala Ala Leu Ser Leu Leu Ala Val Val Ala Cys Val Ile Ala Val Ser
        35                  40                  45
Ala Gly Gly Ala Ala Ile Pro Leu Thr Val Val Gly Gly Ile Ala Ala
    50                  55                  60
Met Ser Gly Leu Leu Ser Ala Ala Thr Ile Ile Cys Ser Ala Lys Lys
65                  70                  75                  80
Ala Leu Ala Gln Arg Lys Gln Lys Gln Leu Glu Ala Ser Leu Pro Leu
                85                  90                  95
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Asp Asn Ala Thr Glu His Val Asn Tyr Leu Thr Ser Asp Thr Pro Tyr
            100                 105                 110
Phe Asn Gln Trp Glu Ser Leu Asp Ala Leu Asn Lys Gln Leu Ser Gln
        115                 120                 125
Ile Asp Leu Thr Ile Gln Ala Pro Glu Lys Lys Leu Leu Lys Glu Val
    130                 135                 140
Leu Gly Ser Arg Tyr Asp Ser Ile Asn His Ser Ile Glu Glu Ile Ser
145                 150                 155                 160
Asp Arg Phe Thr Lys Met Leu Ser Leu Leu Arg Leu Arg Glu His Phe
                165                 170                 175
Tyr Arg Gly Glu Glu Arg Tyr Thr Pro Tyr Leu Thr Pro Pro Leu Leu
            180                 185                 190
Lys Lys Asn Arg Leu Leu Ile Gln Ile Thr Ser Asn Met Ile Arg Met
        195                 200                 205
Leu Pro Lys Phe Gly Gly Val Phe Ser Leu Lys Ala Ile His
    210                 215                 220
<210>149
<211>151
<212>PRT
<213>Chlamydia trachomatis
<400>149
Thr Lys Ala Phe Ser Gly Phe Ile Val Arg Lys Thr Val Ile Val Ala
  1               5                  10                  15
Met Ser Gly Gly Val Asp Ser Ser Val Val Ala Tyr Leu Leu Lys Lys
             20                  25                  30
Gln Gly Glu Tyr Asn Val Val Gly Leu Phe Met Lys Asn Trp Gly Glu
         35                  40                  45
Gln Asp Glu Asn Gly Glu Cys Thr Ala Thr Lys Asp Phe Arg Asp Val
     50                  55                  60
Glu Arg Ile Ala Glu Gln Leu Ser Ile Pro Tyr Tyr Thr Val Ser Phe
 65                  70                  75                  80
Ser Lys Glu Tyr Lys Glu Arg Val Phe Ser Arg Phe Leu Arg Glu Tyr
                 85                  90                  95
Ala Asn Gly Tyr Thr Pro Asn Pro Asp Val Leu Cys Asn Arg Glu Ile
            100                 105                 110
Lys Phe Asp Leu Leu Gln Lys Lys Val Leu Glu Leu Lys Gly Asp Phe
        115                 120                 125
Leu Ala Thr Gly His Tyr Cys Arg Gly Gly Ala Asp Gly Thr Gly Phe
    130                 135                 140
Val Gln Arg Lys Arg Pro Gln
145                 150
<210>150
<211>203
<212>PRT
<213>Chlamydia trachomatis
<400>150
Asp Ala Leu Ser Asn Val Leu Phe Pro Leu Gly Gly Met Tyr Lys Thr
  1               5                  10                  15
Glu Val Arg Arg Ile Ala Gln Glu Ala Gly Leu Ala Thr Ala Thr Lys
             20                  25                  30
Lys Asp Ser Thr Gly Ile Cys Phe Ile Gly Lys Arg Pro Phe Lys Ser
         35                  40                  45
Phe Leu Glu Gln Phe Val Ala Asp Ser Pro Gly Asp Ile Ile Asp Phe
     50                  55                  60
Asp Thr Gln Gln Val Val Gly Arg His Glu Gly Ala His Tyr Tyr Thr
 65                  70                  75                  80
Ile Gly Gln Arg Arg Gly Leu Asn Ile Gly Gly Met Glu Lys Pro Cys
                 85                  90                  95
Tyr Val Leu Ser Lys Asn Met Glu Lys Asn Ile Val Tyr Ile Val Arg
            100                 105                 110
Gly Glu Asp His Pro Leu Leu Tyr Arg Gln Glu Leu Leu Ala Lys Glu
```

```
        115                 120                 125
Leu Asn Trp Phe Val Pro Leu Gln Glu Pro Met Ile Cys Ser Ala Lys
    130                 135                 140
Val Arg Tyr Arg Ser Pro Asp Glu Lys Cys Ser Val Tyr Pro Leu Glu
145                 150                 155                 160
Asp Gly Thr Val Lys Val Ile Phe Asp Val Pro Val Lys Ala Val Thr
                165                 170                 175
Pro Gly Gln Thr Val Ala Phe Tyr Gln Gly Asp Ile Cys Leu Gly Gly
            180                 185                 190
Gly Val Ile Glu Val Pro Met Ile His Gln Leu
        195                 200
<210>151
<211>431
<212>PRT
<213>Chlamydia trachomatis
<400>151
Ser Trp Ser Ser Cys Thr Ser Gln Tyr Asp Gly Thr Thr Ser Asp Leu
  1               5                  10                  15
Met Arg Leu Glu Ala Glu Ile Glu Lys Thr Lys Gln Ala Lys Glu Gln
            20                  25                  30
Ala Ile Gly Thr Gln Glu Tyr Glu Lys Ala Ala Ser Leu Arg Asp Glu
        35                  40                  45
Glu Lys Lys Leu Arg Glu Lys Leu Gly Asn Met Lys Gln Gln Trp Glu
    50                  55                  60
Ser Asn Lys Glu Glu His Gln Val Pro Val Asp Glu Glu Ala Val Ala
65                  70                  75                  80
Gln Val Val Ser Val Gln Thr Gly Ile Pro Ala Ala Arg Leu Thr Glu
                85                  90                  95
Ala Glu Ser Glu Lys Leu Leu Thr Leu Glu Thr Thr Leu Gln Lys Lys
            100                 105                 110
Val Ile Gly Gln Ser Gln Ala Val Ala Ser Ile Cys Arg Ala Ile Arg
        115                 120                 125
Arg Ser Arg Thr Gly Ile Lys Asp Pro Asn Arg Pro Met Gly Ser Phe
    130                 135                 140
Leu Phe Leu Gly Pro Thr Gly Val Gly Lys Thr Leu Leu Ala Gln Gln
145                 150                 155                 160
Ile Ala Ile Glu Met Phe Gly Gly Glu Asp Ser Leu Ile Gln Val Asp
                165                 170                 175
Met Ser Glu Tyr Met Glu Lys Phe Ala Ala Thr Lys Met Met Gly Ser
            180                 185                 190
Pro Pro Gly Tyr Val Gly His Glu Glu Gly Gly His Leu Thr Glu Gln
        195                 200                 205
Val Arg Arg Arg Pro Tyr Cys Val Val Leu Phe Asp Glu Ile Glu Lys
    210                 215                 220
Ala His Pro Asp Ile Met Asp Leu Met Leu Gln Ile Leu Glu Gln Gly
225                 230                 235                 240
Arg Leu Thr Asp Ser Phe Gly Arg Lys Ile Asp Phe Arg Asn Thr Ile
                245                 250                 255
Ile Ile Met Thr Ser Asn Leu Gly Ala Asp Leu Ile Arg Lys Ser Gly
            260                 265                 270
Glu Ile Gly Phe Gly Leu Arg Ser His Met Asp Tyr Ala Val Ile Lys
        275                 280                 285
Glu Lys Ile Asp Ala Ala Val Lys Lys His Leu Lys Pro Glu Phe Ile
    290                 295                 300
Asn Arg Leu Asp Glu Ser Val Ile Phe Lys Pro Leu Glu Lys Glu Ala
305                 310                 315                 320
Leu Ser Glu Ile Ile His Leu Glu Ile Asn Lys Leu Gly Ser Arg Leu
                325                 330                 335
Gln Asn Tyr Gln Met Asp Leu Asn Ile Pro Asp Ser Val Ile Ser Phe
            340                 345                 350
Leu Val Thr Lys Gly His Ser Pro Glu Met Gly Ala Arg Pro Leu Arg
```

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        355                 360                 365
Arg Val Val Glu Gln Tyr Leu Glu Asp Pro Leu Ala Glu Met Leu Leu
    370                 375                 380
Lys Glu Ser Cys Arg Gln Glu Ala Arg Lys Leu Arg Ala Arg Leu Thr
385                 390                 395                 400
Glu Glu Arg Val Val Phe Glu Arg Glu Glu Glu Ala Val Ser Ala Leu
                405                 410                 415
Ala Ile Glu Gly Asp Gly Ser Glu Pro Ile Thr Ala Asp Glu Ser
            420                 425                 430
```

<210>152
<211>438
<212>PRT
<213>Chlamydia trachomatis
<400>152

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Met Phe Glu Lys Phe Thr Asn Arg Ala Lys Gln Val Ile Lys Leu Ala
  1               5                  10                  15
Lys Lys Glu Ala Gln Arg Leu Asn His Asn Tyr Leu Gly Thr Glu His
            20                  25                  30
Ile Leu Leu Gly Leu Leu Lys Leu Gly Gln Gly Val Ala Val Asn Val
        35                  40                  45
Leu Arg Thr Leu Gly Val Asp Phe Asp Thr Ala Lys His Glu Val Glu
    50                  55                  60
Arg Leu Ile Gly Tyr Gly Pro Glu Ile Gln Val Tyr Gly Asp Pro Ala
65                  70                  75                  80
Leu Thr Gly Arg Val Lys Lys Ser Phe Glu Ser Ala Asn Glu Glu Ala
                85                  90                  95
Ala Leu Leu Glu His Asn Tyr Val Gly Thr Glu His Leu Leu Leu Gly
            100                 105                 110
Ile Leu Asn Gln Ser Asp Gly Val Ala Leu Gln Val Leu Glu Asn Leu
        115                 120                 125
His Val Asp Pro Lys Glu Ile Arg Lys Glu Ile Leu Lys Glu Leu Glu
    130                 135                 140
Thr Phe Asn Leu Gln Leu Pro Pro Ser Ser Ser Ile Thr Pro Arg Asn
145                 150                 155                 160
Thr Asn Ser Ser Ser Ser Ser Lys Ser Ser Ser Pro Leu Gly Gly His
                165                 170                 175
Thr Leu Gly Gly Asp Lys Pro Glu Lys Leu Ser Ala Leu Lys Ala Tyr
            180                 185                 190
Gly Tyr Asp Leu Thr Glu Met Phe Lys Glu Ser Arg Leu Asp Pro Val
        195                 200                 205
Ile Gly Arg Ser Ala Glu Val Glu Arg Leu Ile Leu Ile Leu Cys Arg
    210                 215                 220
Arg Arg Lys Asn Asn Pro Val Leu Val Gly Glu Ala Gly Val Gly Lys
225                 230                 235                 240
Thr Ala Ile Val Glu Gly Leu Ala Gln Lys Ile Val Ser Gly Glu Val
                245                 250                 255
Pro Glu Ala Leu Arg Lys Lys Arg Leu Ile Thr Leu Asp Leu Ala Leu
            260                 265                 270
Met Ile Ala Gly Thr Lys Tyr Arg Gly Gln Phe Glu Glu Arg Ile Lys
        275                 280                 285
Ala Val Met Asp Glu Val Arg Lys His Gly Asn Ile Leu Leu Phe Ile
    290                 295                 300
Asp Glu Leu His Thr Ile Val Gly Ala Gly Ala Ala Glu Gly Ala Ile
305                 310                 315                 320
Asp Ala Ser His Ile Leu Lys Pro Ala Leu Ala Arg Gly Glu Ile Gln
                325                 330                 335
Cys Ile Gly Ala Thr Thr Leu Asp Glu Tyr Arg Lys His Ile Glu Lys
            340                 345                 350
Asp Ala Ala Leu Glu Arg Arg Phe Gln Lys Ile Val Val Gln Pro Pro
        355                 360                 365
Ser Val Asp Glu Thr Val Glu Ile Leu Arg Gly Leu Lys Lys Lys Tyr
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    370                 375                 380
Glu Glu His His Asn Val Phe Ile Thr Asp Glu Ala Leu Val Ala Ala
385                 390                 395                 400
Ala Lys Leu Ser Asp Gln Tyr Val His Gly Arg Phe Leu Pro Asp Lys
                405                 410                 415
Ala Ile Asp Leu Leu Asp Glu Ala Gly Ala Arg Val Arg Val Asn Thr
            420                 425                 430
Met Gly Gln Leu Arg Thr
        435
<210>153
<211>240
<212>PRT
<213>Chlamydia trachomatis
<400>153
Ile Met Arg Thr Arg Val Ile Asp Ser Ile Arg Gly Thr Pro Lys Asp
  1               5                  10                  15
Leu Met Gln Lys Asp Arg Leu Leu Leu Asp Ser Leu Arg Lys Gly Glu
             20                  25                  30
Val Ile Leu His Leu Tyr Glu Trp Glu Gly Ile Phe Pro Leu Thr Tyr
         35                  40                  45
Gly Cys Phe Ile Lys Pro Glu Arg Phe Leu Lys Ala Asn Trp Glu Ser
     50                  55                  60
Leu Gly Val Ser Ala Ala Ser Arg Pro Thr Gly Gly Gly Val Thr Phe
 65                  70                  75                  80
His Asn Ser Asp Tyr Ala Phe Ser Leu Leu Val Ser Ser Glu His Pro
                 85                  90                  95
Leu Tyr Gln Asp Ser Ile Leu Ala Asn Tyr His Thr Val Asn Arg Phe
            100                 105                 110
Val Leu Lys Thr Ile Asn Lys Leu Phe Gly Leu Glu Gly Ser Leu Ser
        115                 120                 125
Pro Ile Glu Val Ser Thr Asp Arg Ala Glu Ser Ser Asn Phe Cys Val
    130                 135                 140
Ala Lys Thr Ser Lys Tyr Asp Val Leu Ile Gly Asn Arg Lys Val Gly
145                 150                 155                 160
Gly Ala Ala Gln Arg Ser Val Lys Gln Gly Phe Leu His Gln Gly Ser
                165                 170                 175
Ile Phe Leu Ser Gly Asn Ser Leu Asp Phe Tyr Arg Asn Ile Leu Leu
            180                 185                 190
Pro Asp Leu Val Asp Lys Ile Gly Pro Glu Val Glu Lys Ser Ala Phe
        195                 200                 205
Phe Pro Leu Gly Met Glu Ala Ser Ser Thr Val Leu Lys Glu Val Arg
    210                 215                 220
Lys Glu Val Lys Asp Ser Leu Met Arg Ile Phe Met Gln Glu Gly Ile
225                 230                 235                 240
<210>154
<211>489
<212>PRT
<213>Chlamydia trachomatis
<400>154
Arg Leu Phe Asp Ala Asp Leu Tyr Ala Gly Gly Asp Leu Ile Arg Met
  1               5                  10                  15
Lys Met Ala Phe Leu Arg Lys Ile Phe Val Phe Val Ala Cys Val Val
             20                  25                  30
Ser Leu Asn Gly Phe Ala His Thr Ile Ala Ile Pro Asp Gly Asp Lys
         35                  40                  45
Lys Ala Lys Val Leu Ile His Asp Asn Gly Tyr Glu Met Tyr Glu His
     50                  55                  60
Leu Leu Ala Ala Ile Ser Ser Ala Lys Tyr Thr Val Glu Leu Cys Pro
 65                  70                  75                  80
Cys Leu Ala Gly Gly Glu Ile Leu Ser Thr Val Leu Gln Arg Leu Glu
                 85                  90                  95
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Gln Arg Met Glu Glu Val Pro Ala Leu Val Ser Tyr Ile Leu Val Gln
            100                 105                 110
Pro Thr Cys Ile Asp Asp Asn Asp Arg Lys Asn Leu Lys Thr Leu Gln
        115                 120                 125
Glu Asn Tyr Pro Asp Arg Phe Phe Tyr Leu Phe Ser Asp Trp Pro Pro
    130                 135                 140
Tyr Cys Asn Val Phe Phe Pro Asn Val Thr Glu Ser His Thr Lys Leu
145                 150                 155                 160
Ser Ile Val Asp Gly Lys Tyr Ile Phe Ile Gly Gly Ser Asn Leu Glu
                165                 170                 175
Asp Leu Gln Cys Ser Lys Gly Asp Val Asp Leu Glu Val Ser Asp Ser
            180                 185                 190
Pro Arg Ala Val Ile Gly Gly Val Leu Arg Pro Ser Ala Met Arg Asp
        195                 200                 205
Gln Asp Val Thr Ile Val Ser Glu Glu Tyr Gly Ala Leu Leu Arg Lys
    210                 215                 220
Glu Phe Cys Ala His Tyr Ala Leu Trp Lys Asp Phe Thr Gln Lys Leu
225                 230                 235                 240
Trp Leu Asn Lys Lys Leu Asp Asp Phe Arg Gly Ile Asp Pro Ile Asn
                245                 250                 255
Leu Ser Ile Glu Lys Ala Arg Ser Ser Phe Cys Ala Met Ile Glu Thr
            260                 265                 270
Ser Leu Cys Ala Val Ser Val Pro Leu Asp Lys Met His Phe Ile Phe
        275                 280                 285
Ser Gly Pro Asp Glu Ser Asn Asn Thr Ile Ala Glu Glu Tyr Val Arg
    290                 295                 300
Leu Ile Asn Gln Ala Gln His Ser Ile Arg Ile Ala Gln Met Phe Phe
305                 310                 315                 320
Ile Pro Val Ala Lys Ile Tyr Asp Ser Leu Met Ala Ala Cys Trp Asp
                325                 330                 335
Arg Gly Val Glu Ile Tyr Leu Val Thr Asn Gly Arg Thr Asp Arg Ser
            340                 345                 350
Pro Glu Ile Thr Arg Ser Tyr Ala Trp Gly Asn Arg Ile Asn Tyr Phe
        355                 360                 365
Pro Leu Thr Phe Gly Ser Arg Pro Leu Leu Trp Glu Arg Phe Leu Tyr
    370                 375                 380
Ser Pro Ser Arg Ala Ser Met Lys Phe Tyr Val Ser Glu Phe Tyr Val
385                 390                 395                 400
Ala Asn Thr Gln Leu His Lys Lys Cys Met Leu Val Asp Asp His Ile
                405                 410                 415
Leu Val Ile Gly Ser Tyr Asn Phe Gly Lys Lys Ser Asn Asp Cys Asp
            420                 425                 430
Tyr Glu Cys Ile Val Val Ile Asp Ser Lys Glu Ala Val Ser Lys Ala
        435                 440                 445
Gln Val Val Phe Glu Lys Asp Leu Arg Leu Ser Lys Ser Val Thr His
    450                 455                 460
Asp Asp Ile Ile Asn Trp Tyr Phe Asp Pro Val His Tyr Cys Leu Gly
465                 470                 475                 480
Tyr Leu Glu Gln Arg Tyr Met Pro Ser
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<400>155
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Leu Leu Ala Phe Phe Asn Lys His Gln Lys Lys Phe Ile Gly Leu Val
             20                  25                  30
Ile Ala Gly Val Cys Leu Ser Gly Val Gly Val Ser Val Gly Gln Thr
         35                  40                  45
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Val Lys Lys Thr Asn Lys Leu Gly Ser Gly Lys Thr Val Tyr Arg Thr
     50                  55                  60
Pro Ser Gly Arg Lys Tyr Ser Glu Lys Glu Phe Leu Leu Leu Lys His
 65                  70                  75                  80
Phe Leu Ser Asn Glu Ala Tyr Pro Phe Thr Gly Asn Pro Arg Glu Trp
                85                  90                  95
Asn Phe Leu Asn Glu Gly Leu Leu Thr Glu Arg Phe Leu Thr Asn Lys
            100                 105                 110
Leu Gly Glu Lys Leu Phe Leu Ser Ile Tyr Lys Ser Gly Phe Pro Ala
        115                 120                 125
Phe Asp Lys Glu Arg Ser Tyr Glu Gly Tyr Arg Arg Phe Asp Ala Pro
    130                 135                 140
Phe Ile Ser Ser Glu Glu Val Trp Lys Ser Ser Ala Pro Gln Leu Arg
145                 150                 155                 160
Glu Ala Phe His Ile Phe Gln Gln Leu Thr Asp Pro Val Ser Pro Glu
                165                 170                 175
Gly Phe Ala Val Arg Val Arg Leu Phe Leu Glu Glu Lys Lys Phe Pro
            180                 185                 190
His Tyr Val Leu Arg Gln Met Leu Glu Tyr Arg Arg Gln Met Phe Asn
        195                 200                 205
Leu Pro Val Asp Asn Ser Leu Val Gln Gly Arg Asp Leu Arg Leu Phe
    210                 215                 220
Gly Tyr Lys Asn Val Lys Asp Trp Phe Gly Asp Lys Tyr Ile Ser Ser
225                 230                 235                 240
Val Thr Glu Ala Met Leu Cys Phe Ile Asp Glu Gln Lys Lys Lys Val
                245                 250                 255
Gly Met Pro Ser Leu Lys Glu Ala Arg Gln Asp Phe Tyr Asp Lys Ala
            260                 265                 270
Gln Met His Leu Pro Asp Leu Val Asn Met Leu Ser Leu Ile
        275                 280                 285
<210>156
<211>435
<212>PRT
<213>Chlamydia trachomatis
<400>156
Ser Ala Asp Ala Phe Ala Arg Leu Ser Lys His Ala Glu Phe Asn Leu
  1                 5                  10                  15
Thr Phe Glu Gln Leu Val Ala Ser Phe Tyr Ala Phe Met Gly Val Glu
             20                  25                  30
Glu Ser Asp Phe Leu Gly Met Tyr Arg Glu Ile Leu Leu Tyr Lys Lys
         35                  40                  45
Ala Leu Leu Ser Leu Glu Gly Ala Val Ser Phe Asp Tyr Tyr Pro Leu
     50                  55                  60
Gln Lys Phe Phe Ser Met Gly Lys Asp Ser Val Ser Val Glu Leu Phe
 65                  70                  75                  80
His Leu Pro Asp Ser Leu Val Phe Lys Asp Lys Glu Asp Leu Glu Ala
                85                  90                  95
Phe Glu Thr Tyr Leu His Leu Thr Ala Phe Pro Ser Val His Val Leu
            100                 105                 110
Asp Val Pro Thr Lys Ala Phe Pro Ile Glu Arg Val Arg Ser Lys Ala
        115                 120                 125
Glu Cys Leu Val Gly Lys Arg Phe Ala Val Ser Tyr Gln Ser Val Lys
    130                 135                 140
Leu Ala Asp Leu Glu Lys Tyr Val Pro Met Ala Gln Val Tyr Gln Trp
145                 150                 155                 160
Tyr Gln Asn Pro Glu Asn Phe Glu Glu Ile Leu Leu Glu Phe Pro Glu
                165                 170                 175
Leu Glu Thr Ser Ser Ser Leu Arg Asp Ile Leu Asn Leu Lys Pro Thr
            180                 185                 190
Ile Val Glu Lys Ala His Ser Tyr Val Arg Lys Ala Ile Leu Arg Ala
        195                 200                 205
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        195                 200                 205
Asp Pro Glu Arg Ile Gln Ser Glu Leu Ala Lys Lys Glu Arg Gln Glu
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Glu Glu Leu Phe Leu Ser Ile Gly Lys Asp His Val Leu Pro Gly Ile
225                 230                 235                 240
Gln Asn Gly Val Arg Leu Ala Asn Val Leu Met Gln Gln Asp Ser Val
                245                 250                 255
Asp Ser Tyr Thr Gln Asp Asn Glu His Phe Tyr Ser Ile Ser Val Ile
            260                 265                 270
Ser Arg Ala Asp Lys Asp Glu Val Leu Pro Tyr Lys Glu Val Leu Arg
        275                 280                 285
Lys Gly Leu Lys Lys Val Leu Leu Glu Lys Tyr Lys Ala Glu Glu Arg
    290                 295                 300
Ile Ser Arg Val Leu Thr His Leu Gln Glu Ser Phe Pro Asn Ser Gln
305                 310                 315                 320
Gly Gln Asp Leu Tyr Gln Arg Arg Leu Val Arg Phe Val Lys Ala Phe
                325                 330                 335
Gln Thr Gly Lys Leu Ala Gln Gly Asp Leu Phe Gly Gly Leu Glu Lys
            340                 345                 350
Thr Met Lys Thr Phe Ser Arg Gly Asp Gln Gly Ala Pro Gln Glu Phe
        355                 360                 365
Glu Asp Met Phe Ala Leu Lys Glu Gly Gln Val Ser Asp Val Leu Phe
    370                 375                 380
Asp Leu Asp Lys Gly Pro Phe Tyr Tyr Thr Ala Ile Ser Lys Ser Cys
385                 390                 395                 400
Cys Asp Tyr Pro Val Ser Leu Asp Lys Leu Leu Phe Ala Lys Ser His
                405                 410                 415
Leu Asn Glu Glu Phe Leu Arg Pro Tyr Leu Glu Glu Val Phe Phe His
            420                 425                 430
Asn Pro Ser
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Asp Pro Ile Trp Lys Lys Phe Phe Phe Thr Thr Leu Val Lys Gly Leu
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Ser Arg Thr Asn Met Lys Gly Gln Lys Tyr Tyr Ser Asp Tyr His Val
            20                  25                  30
Trp Ile Glu Pro Ile His Ser Arg Ile Val Lys Leu Gly Leu Ser Ser
        35                  40                  45
Gln Met Ala Gly Xaa Leu Gly Asn Ile Leu His Ile Asp Leu Pro Ser
    50                  55                  60
Val Gly Ser Phe Ile Lys Glu Gly Glu Glu Leu Cys Ile Leu Glu Ser
65                  70                  75                  80
Ser Lys Ser Ala Ile Glu Val Leu Ser Pro Val Ser Gly Glu Val Leu
                85                  90                  95
Glu Val Asn Thr Ala Leu Glu Asp Asp Ile Leu Pro Val Asn Asn Ala
            100                 105                 110
Thr Glu Ser Glu Gly Trp Phe Val Val Leu Gln Leu Thr Glu Asp Phe
        115                 120                 125
Arg Ser Glu Ser Phe Ser Leu Glu Pro
    130                 135
<210>158
<211>244
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<213>Chlamydia trachomatis
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Met Trp Leu Gly Asp Tyr Ser Leu Leu Asn Leu Leu Gly Ile Phe Leu
  1               5                  10                  15
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Gln Ala Thr Phe Ile Gln Asn Ile Leu Leu Ser Thr Phe Leu Gly Met
            20                  25                  30
Cys Ser Tyr Leu Ala Cys Ser Ser Arg Leu Ser Thr Ala Asn Gly Leu
        35                  40                  45
Gly Met Ser Val Ala Leu Val Leu Thr Ile Thr Gly Ser Ile Asn Trp
    50                  55                  60
Leu Val His Tyr Phe Ile Thr Lys Pro Gly Ala Leu Ala Trp Leu Ser
65                  70                  75                  80
Pro Ala Leu Ala Asn Ile Asp Leu Ser Phe Leu Glu Leu Ile Met Phe
                85                  90                  95
Ile Val Val Ile Ala Ala Phe Thr Gln Ile Leu Glu Leu Leu Leu Glu
            100                 105                 110
Arg Phe Ser Arg Asn Leu Tyr Leu Ala Leu Gly Ile Phe Leu Pro Leu
        115                 120                 125
Ile Ala Val Asn Cys Ala Ile Leu Gly Gly Val Leu Phe Gly Ile Thr
    130                 135                 140
Arg Asn Tyr Pro Phe Leu Pro Met Val Val Phe Ser Leu Gly Ser Gly
145                 150                 155                 160
Cys Gly Trp Trp Leu Ala Ile Val Leu Phe Ala Thr Ile Arg Glu Lys
                165                 170                 175
Leu Ala Tyr Ser Asp Val Pro Gln His Leu Arg Gly Thr Gly Ile Ser
            180                 185                 190
Phe Ile Thr Thr Gly Leu Met Ala Met Ala Phe Met Gly Leu Thr Gly
        195                 200                 205
Ile Asp Ile Ser Lys Pro Thr Thr Ser Lys Pro Ala Xaa Xaa Met Asn
    210                 215                 220
Ile Ala Thr Asp Ser Pro Gln Pro Asn Thr His Ser Ser Ser Glu Glu
225                 230                 235                 240
Pro Lys Ala Ser
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<211>217
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<213>Chlamydia trachomatis
<400>159

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Val Glu Ser Leu Met Thr Thr Asn Lys Ser Tyr Leu Thr Tyr Phe Thr
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Asp Ala Leu Trp Ile Asn Asn Gln Pro Leu Ile Ala Ile Leu Gly Ile
            20                  25                  30
Cys Ser Ala Leu Ala Val Thr Thr Thr Val Thr Thr Ala Leu Thr Met
        35                  40                  45
Gly Phe Ala Val Ser Phe Val Thr Gly Cys Ser Ser Phe Val Val Ser
    50                  55                  60
Leu Leu Arg Lys Ile Thr Pro Glu Ser Val Arg Met Ile Ala Gln Leu
65                  70                  75                  80
Ile Ile Ile Ser Leu Phe Val Ile Leu Ile Asp Gln Phe Leu Lys Ala
                85                  90                  95
Phe Phe Phe Thr Ile Ser Lys Thr Leu Ser Val Phe Val Gly Leu Ile
            100                 105                 110
Ile Thr Asn Cys Ile Val Met Gly Arg Ala Glu Ser Met Ala Arg His
        115                 120                 125
Val Ser Pro Ile Pro Ala Phe Leu Asp Gly Leu Gly Ser Gly Leu Gly
    130                 135                 140
Tyr Gly Trp Val Leu Val Cys Ile Ser Ile Ile Arg Glu Leu Phe Gly
145                 150                 155                 160
Phe Gly Thr Ile Leu Gly Phe Arg Val Ile Pro Glu Ile Leu Tyr Ala
                165                 170                 175
Ser Ala Ala His Pro Asp Gly Tyr Glu Asn Leu Gly Leu Met Val Leu
            180                 185                 190
Ala Pro Ser Ala Phe Phe Leu Leu Gly Ile Met Ile Trp Ile Val Asn
        195                 200                 205
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Substitute Sheet

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Ile Ile Arg Ala Pro Lys Thr Lys Arg
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<210>160
<211>316
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<213>Chlamydia trachomatis
<400>160
Met Ala Ser Lys Ser Arg His Tyr Leu Asn Gln Pro Trp Tyr Ile Ile
  1               5                  10                  15
Leu Phe Ile Phe Val Leu Ser Leu Ile Ala Gly Thr Leu Leu Ser Ser
             20                  25                  30
Val Tyr Tyr Val Leu Ala Pro Ile Gln Gln Gln Ala Ala Glu Phe Asp
         35                  40                  45
Arg Asn Gln Gln Met Leu Met Ala Ala Gln Val Ile Ser Ser Asp Asn
     50                  55                  60
Thr Phe Gln Val Tyr Glu Lys Gly Asp Trp His Pro Ala Leu Tyr Asn
 65                  70                  75                  80
Thr Lys Lys Gln Leu Leu Glu Ile Ser Ser Thr Pro Pro Lys Val Thr
                 85                  90                  95
Val Thr Thr Leu Ser Ser Tyr Phe Gln Asn Phe Val Arg Val Leu Leu
            100                 105                 110
Thr Asp Thr Gln Gly Asn Leu Ser Ser Phe Glu Asp His Asn Leu Asn
        115                 120                 125
Leu Glu Glu Phe Leu Ser Gln Pro Thr Pro Val Ile His Gly Leu Ala
    130                 135                 140
Leu Tyr Val Val Tyr Ala Ile Leu His Asn Asp Ala Ala Ser Ser Lys
145                 150                 155                 160
Leu Ser Ala Ser Gln Val Ala Lys Asn Pro Thr Ala Ile Glu Ser Ile
                165                 170                 175
Val Leu Pro Ile Glu Gly Phe Gly Leu Trp Gly Pro Ile Tyr Gly Phe
            180                 185                 190
Leu Ala Leu Glu Lys Asp Gly Asn Thr Val Leu Gly Thr Ser Trp Tyr
        195                 200                 205
Gln His Gly Glu Thr Pro Gly Leu Gly Ala Asn Ile Ala Asn Pro Gln
    210                 215                 220
Trp Gln Lys Asn Phe Arg Gly Lys Lys Val Phe Leu Val Ser Ala Ser
225                 230                 235                 240
Gly Glu Thr Asp Phe Ala Lys Thr Thr Leu Gly Leu Glu Val Ile Lys
                245                 250                 255
Gly Ser Val Ser Ala Ala Leu Gly Asp Ser Pro Lys Ala Ala Ser Ser
            260                 265                 270
Ile Asp Gly Ile Ser Gly Ala Thr Leu Thr Cys Asn Gly Val Thr Glu
        275                 280                 285
Ser Phe Ser His Ser Leu Ala Pro Tyr Arg Ala Leu Leu Thr Phe Phe
    290                 295                 300
Ala Asn Ser Lys Pro Ser Gly Glu Ser His Asp His
305                 310                 315
<210>161
<211>344
<212>PRT
<213>Chlamydia trachomatis
<400>161
Leu Leu Arg Phe Glu Arg Val Thr Phe Ser Thr Phe Leu Ser Asp Thr
  1               5                  10                  15
Met Leu Glu Lys Leu Val Asp Ser Leu Trp Lys Ile Cys Arg Lys Ser
             20                  25                  30
Lys Phe Gln His Met Thr Pro Ile Ala Asp Ala Val Asp Thr Phe Cys
         35                  40                  45
Phe Glu Pro Leu His Thr Pro Ser Ser Pro Pro Phe Val Arg Asp Ala
     50                  55                  60
Val Asp Val Lys Arg Trp Met Met Leu Val Val Ile Ala Leu Met Pro
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 65                  70                  75                  80
Thr Ile Phe Ala Ala Val Trp Asn Ser Gly Leu Gln Ala Leu Val Tyr
                85                  90                  95
Gln Ser Ser Asn Pro Arg Ile Met Glu Ala Xaa Leu His Ile Ser Gly
            100                 105                 110
Phe Lys Ser Tyr Phe Ser Phe Val Ser Gln Glu Ile Gly Ile Gly Ser
        115                 120                 125
Val Leu Phe Ala Gly Cys Lys Ile Phe Leu Pro Leu Leu Phe Ile Ser
    130                 135                 140
Tyr Ala Val Gly Gly Thr Cys Glu Val Leu Phe Ala Ile Ile Arg Lys
145                 150                 155                 160
His Lys Ile Ala Glu Gly Leu Leu Val Thr Gly Met Leu Tyr Pro Leu
                165                 170                 175
Ile Leu Pro Pro Thr Ile Pro Tyr Trp Met Ala Ala Leu Gly Ile Ala
            180                 185                 190
Phe Gly Val Val Met Gly Lys Glu Leu Phe Gly Gly Thr Gly Met Asn
        195                 200                 205
Ile Leu Asn Pro Ala Leu Thr Gly Arg Ala Phe Leu Phe Phe Thr Phe
    210                 215                 220
Pro Ala Lys Met Ser Gly Asp Val Trp Val Gly Ser Asn Pro Ser Arg
225                 230                 235                 240
Ile Lys Glu Ser Leu Ala Thr Met Ser Ser Leu Ala Glu Lys Ser His
                245                 250                 255
Phe Asp Gly Phe Ser Gln Ser Thr Cys Leu Gln Ile Leu Asn Ser Thr
            260                 265                 270
Pro Pro Ser Val Lys Arg Val His Ile Asp Ala Ile Ala Ser Asn Ile
        275                 280                 285
Leu Asn Leu Glu His Val Pro Thr Gln Asp Val Leu Gln Thr Gln Phe
    290                 295                 300
Ala Thr Trp Ala Glu Ser Tyr Pro Gly Leu Thr Val Asp Gln Leu Ser
305                 310                 315                 320
Leu Glu Xaa Thr Ser Lys Phe Cys Asn Tyr Ser Asn Asn Arg Arg Arg
                325                 330                 335
Phe Arg Ala Ser Ser Cys Thr Leu
            340
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<211>198
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<213>Chlamydia trachomatis
<400>162
Val Gly Arg Gly Met Phe Lys Arg Pro Ala Lys Asn Phe Phe Asp Glu
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Val Gln Thr Leu Tyr Glu Asp Ser Gly Ala Asn Ser Thr Ser Tyr Ser
             20                  25                  30
Ile Tyr Pro Gln Arg Thr Glu Arg Leu Glu Asn His Ser Asn Ile Phe
         35                  40                  45
Glu Pro Ala Lys Pro Ala Glu Thr Arg Leu Leu Ser Gln Glu Glu His
     50                  55                  60
Ser Gln Trp Thr Asp Gln Gln Glu Gly Leu Ala Thr Gln Glu Ser Ser
 65                  70                  75                  80
Phe Pro Glu Glu Pro Glu Thr Thr Leu Gly Glu Gly Val Ser Phe Lys
                85                  90                  95
Gly Glu Leu Thr Phe Glu Arg Leu Leu Arg Ile Asp Gly Thr Phe Glu
            100                 105                 110
Gly Ile Leu Val Ser Lys Gly Lys Ile Ile Val Gly Pro Gln Gly Tyr
        115                 120                 125
Val Lys Ala Asn Ile Glu Leu Glu Glu Ala Val Ile Ala Gly Val Val
    130                 135                 140
Glu Gly Asn Ile Thr Val Thr Gly Arg Val Ser Leu Gln Gly Arg Ala
145                 150                 155                 160
Met Val Thr Gly Asp Ile Gln Ala Gly Ser Leu Cys Val Asp Glu Gly
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                165                 170                 175
Val Arg Leu Cys Gly Tyr Val Ser Ile Gln Gly Ala Pro Ser Asn Glu
            180                 185                 190
Gln Glu Glu Ile Asp Ser
        195
<210>163
<211>481
<212>PRT
<213>Chlamydia trachomatis
<400>163
Met Leu His Leu Arg Phe Phe Ser Arg Arg Arg Val His Tyr Arg Ile
  1               5                  10                  15
Leu Asn Ser Ser Ser Asp Lys Glu Asn Ala Met Leu Thr Cys Asn Asp
             20                  25                  30
Cys Ser Thr Trp Glu Gln Phe Val Asn Tyr Ile Lys Thr Arg Cys Ser
         35                  40                  45
Lys Thr Ala Phe Glu Asn Trp Ile Ala Pro Ile Gln Val Leu Glu Glu
     50                  55                  60
Ser Ser Glu Lys Ile Arg Leu Glu Ile Pro Asn Ile Phe Val Gln Ser
 65                  70                  75                  80
Tyr Leu Leu Asp Asn Tyr Lys Lys Asp Leu Cys Ser Phe Val Pro Leu
                 85                  90                  95
Asp Ala Glu Gly Asn Pro Ala Leu Glu Phe Val Val Ala Glu Ile Lys
            100                 105                 110
Arg Ser Ser Pro Leu Val Thr Pro Ser Ile Ala Lys Pro Ala Thr Glu
        115                 120                 125
Val Ser Glu Glu Asn Lys Asp Phe Gln Leu Lys Leu Asn Gly Ala Tyr
    130                 135                 140
Arg Phe Asp Asn Phe Ile Glu Gly Pro Ser Asn Gln Phe Val Lys Ser
145                 150                 155                 160
Ala Ala Leu Gly Ile Ala Ala Arg Pro Gly Arg Ser Tyr Asn Pro Leu
                165                 170                 175
Phe Ile His Gly Gly Val Gly Leu Gly Lys Thr His Leu Leu His Ala
            180                 185                 190
Val Gly His Tyr Val Arg Glu His His Lys Asn Leu Arg Ile His Cys
        195                 200                 205
Ile Thr Thr Glu Ala Phe Ile Asn Asp Leu Val His His Leu Arg Val
    210                 215                 220
Lys Ser Ile Asp Lys Met Lys Asn Phe Tyr Arg Ser Leu Asp Leu Leu
225                 230                 235                 240
Leu Val Asp Asp Ile Gln Phe Leu Gln Asn Arg Gln Asn Phe Glu Glu
                245                 250                 255
Glu Phe Cys Asn Thr Phe Glu Thr Leu Ile His Leu Ser Lys Gln Ile
            260                 265                 270
Val Val Thr Ser Asp Lys Pro Pro Gly Gln Leu Lys Leu Ser Glu Arg
        275                 280                 285
Ile Ile Ala Arg Met Glu Trp Gly Leu Val Ala His Val Gly Val Pro
    290                 295                 300
Asp Leu Glu Thr Arg Val Ala Ile Leu Gln His Lys Ala Glu Gln Lys
305                 310                 315                 320
Gly Leu Asn Ile Pro Asn Glu Met Ala Phe Tyr Ile Ala Asp His Val
                325                 330                 335
Tyr Gly Asn Val Arg Gln Leu Glu Gly Ala Ile Asn Lys Leu Thr Ala
            340                 345                 350
Tyr Cys Leu Leu Phe Asn Lys Pro Leu Thr Glu Thr Thr Val Arg Asp
        355                 360                 365
Thr Leu Lys Glu Leu Phe Arg Ala Pro Ser Lys Gln Lys Val Ser Val
    370                 375                 380
Glu Ser Ile Leu Lys Ser Val Ala Thr Val Phe Gln Val Lys Ile Gln
385                 390                 395                 400
Asp Leu Lys Gly Ser Ser Arg Ala Lys Asn Val Pro Leu Ala Arg Gln
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405 410 415
Val Ala Met Tyr Leu Ala Lys Thr Leu Ile Thr Asp Ser Leu Val Ala
420 425 430
Ile Gly Ala Ala Phe Gly Lys Thr His Ser Thr Val Leu Tyr Ala Cys
435 440 445
Lys Thr Ile Glu Gln Lys Ile Glu Lys Asp Ala Leu Leu Lys Asn Gln
450 455 460
Ile Ser Leu Cys Lys Asn Asn Ile Ala Ile Asp Ser Pro Gln His Phe
465 470 475 480
Val

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<213>Chlamydia trachomatis
<400>164
Arg Asn Pro Asn Gly Arg Arg Arg Ile Arg Asp Ile Ala Lys His Ala
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Gln Ile Leu Asp Met Thr Pro Lys Pro Ser Ala Leu Ser Thr Leu Met
20 25 30
Gln Thr Asn Lys Lys Thr Cys Trp Ala Ser Phe Ser Pro Pro Thr Asn
35 40 45
Phe His Lys Gln Arg Phe Ser Thr Pro Tyr Leu Val Pro Ser Leu Gly
50 55 60
Ser Pro Asp Lys Gln Asp Gln Asp Met Glu Lys Ile Ser Ser Tyr Leu
65 70 75 80
Lys Val Leu Thr Arg Gly Lys Phe Ser Tyr Arg Ser Thr Ala Asp Thr
85 90 95
Leu Ser Arg Lys Asn Lys Arg Ser Ser Asp Gln Lys Arg Asn Gly Gln
100 105 110
His Phe Glu Gln Glu Glu Leu Glu Ala Glu Glu Glu Val Phe Ser Thr
115 120 125
Arg Arg His Ser Ile Ala
130
<210>165
<211>282
<212>PRT
<213>Chlamydia trachomatis
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Leu Leu Cys Arg Arg Phe Pro Val Thr Asp Ser Ile Pro His Ile Pro
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Val Leu Val Lys Glu Ser Leu Ser Leu Phe Arg Gly Arg Asn Pro Val
20 25 30
Val Phe Cys Asp Val Thr Val Gly Ala Gly Gly His Ala Glu Ala Phe
35 40 45
Leu Thr Glu Phe Pro Ser Ile Glu Arg Tyr Asp Gly Ser Asp Arg Asp
50 55 60
Leu Ser Ala Leu Ala Leu Ser Glu Asn Arg Leu Leu Pro Phe Lys Asp
65 70 75 80
Arg Val Arg Leu Arg His Ala Ser Phe Glu Glu Val Asp Thr Leu Thr
85 90 95
Ser Asp Gly Thr Tyr Asp Gly Val Leu Ala Asp Leu Gly Val Ser Ser
100 105 110
Met Gln Leu Asn Asn Leu Glu Arg Gly Phe Ser Phe Gln Gly Glu Asp
115 120 125
His Pro Leu Asp Met Arg Met Asp Thr Ser Arg Gly Met Thr Ala Ser
130 135 140
Glu Val Leu Asn Ser Leu Arg Glu Glu Glu Ile Gly Glu Ile Phe Arg
145 150 155 160
Asn Tyr Gly Glu Glu Pro Leu Trp Arg Ser Ala Ala Ala Ala Val Val
165 170 175

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His Phe Arg Lys Lys Lys Lys Ile Leu Thr Val Lys Asp Leu Lys Asp
            180                 185                 190
Ala Thr Ser Gly Val Phe Pro Ser Tyr Arg Leu Arg Lys Lys Ile His
        195                 200                 205
Pro Leu Thr Leu Ile Phe Gln Ala Leu Arg Ile Tyr Val Asn Gln Glu
    210                 215                 220
Gly Ala Gln Leu Lys Val Leu Leu Asp Ser Ala Phe Arg Trp Leu Arg
225                 230                 235                 240
Pro Gly Gly Arg Leu Ala Val Ile Ser Phe Cys Ser Leu Asp Asp Arg
                245                 250                 255
Pro Val Lys Trp Ala Phe Arg Glu Ala Glu Ala Arg Gly Leu Gly Lys
            260                 265                 270
Ile Leu Thr Lys Lys Val Ile Met Pro Ser
        275                 280
<210>166
<211>185
<212>PRT
<213>Chlamydia trachomatis
<400>166
Leu Met Asn His Arg Arg Gln Leu Thr Leu Ile Val Val Gly Val Leu
  1                 5                  10                  15
Ser Leu Tyr Ala Leu Leu Ile Val Arg Tyr Tyr Lys Ile Gln Ile Cys
            20                  25                  30
Asp Gly Glu Arg Trp Ala Val Glu Ala Ala Asn Gln His Glu Phe Arg
        35                  40                  45
Val Lys Asp Pro Phe Gln Arg Gly Thr Phe Phe Ala Asn Thr Ser Leu
    50                  55                  60
Arg Lys Gly Glu Lys Glu Gln Phe His Pro Leu Ala Ile Asp Ile Thr
65                  70                  75                  80
Lys Phe His Leu Cys Leu Asp Ala Val Val Ile Pro Glu Glu Tyr Arg
                85                  90                  95
Asp Glu Ile Ala Arg Met Val Val Val Met Val Gly Glu Gly Asp Tyr
            100                 105                 110
Gln Ser Ile Arg Ser Glu Phe Asp Arg Lys Ser Arg Tyr Arg Lys Leu
        115                 120                 125
Tyr Val Ser Leu Asp Val Ser Ile Arg Asp Arg Ile Leu Ser Trp Trp
    130                 135                 140
Lys Pro Tyr Ala Val Lys His Lys Ile Pro Ser Asn Ala Leu Phe Phe
145                 150                 155                 160
Ile Ser Asp Tyr Gln Arg Ser Tyr Pro Phe Gly Lys Leu Leu Gly Gln
                165                 170                 175
Val Leu His Thr Ser Gly Asp Lys Arg
            180                 185
<210>167
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<213>Chlamydia trachomatis
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            20                  25                  30
Ser Pro Leu Asn Arg Leu Asp Val Asp Lys Val Thr Lys Ile Pro Arg
        35                  40                  45
Asp Gly Ser Asp Ile Tyr Leu Thr Ile Asp Ala Asn Val Gln Thr Ile
    50                  55                  60
Ala Glu Gln Glu Ile Ala Leu Gly Val Leu Glu Ala Lys Ala Arg Ser
65                  70                  75                  80
Gly Arg Ala Ile Val Leu Asn Ser His Thr Gly Glu Ile Leu Ala Leu
                85                  90                  95
Ala Gln Tyr Pro Phe Phe Asn Pro Arg Glu Tyr Arg Glu Tyr Phe Asn
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            100                 105                 110
Cys Asn Asp Arg Ile Glu Asp Thr Lys Val Lys Ala Val Ser Asp Val
        115                 120                 125
Phe Glu Pro Gly Ser Ile Met Lys Pro Ile Thr Val Ala Ile Ala Leu
    130                 135                 140
Leu Ala Asn Glu Glu Met Gln Lys Arg Ala Gly Glu Asn Leu Phe Asp
145                 150                 155                 160
Pro Tyr Glu Pro Leu Asp Val Ser Arg Arg Val Phe Pro Gly Arg Gln
                165                 170                 175
Lys Met Pro Leu Lys Asp Ile Val Ser Asn Arg Tyr Leu Asn Met Tyr
            180                 185                 190
Met Ala Ile Gln Lys Ser Ser Asn Val Tyr Met Ala Gln Leu Ala Asp
        195                 200                 205
Arg Ile Val Gln Lys Leu Gly Ala Asp Trp Tyr Glu Gln Arg Leu Gln
    210                 215                 220
Asp Phe Gly Phe Gly Lys Arg Thr Gly Ile Glu Leu Pro Ala Glu Ala
225                 230                 235                 240
Val Gly Leu Val Pro Ser Arg Lys Arg Phe His Lys Asn Gly Ser Pro
                245                 250                 255
Glu Trp Ser Leu Ser Thr Pro Tyr Ser Leu Ala Met Gly Tyr Asn Leu
            260                 265                 270
Leu Ala Thr Ser Met Gln Met Val Gln Ala Tyr Ala Val Phe Gly Asn
        275                 280                 285
Gly Gly Phe Leu Ile Arg Pro Thr Leu Val Arg Lys Ile Val Ser Pro
    290                 295                 300
Ser Gly Glu Glu Lys Ile Leu Ser Ser Asn Pro Lys Lys Ile Arg Val
305                 310                 315                 320
Leu Ser Glu Lys Ile Val Ala Gly Cys Cys Ser Cys Tyr Ala Phe His
                325                 330                 335
Asn Met Phe Arg Arg Asp Gly Asp Ser Cys Cys Tyr
            340                 345
<210>168
<211>138
<212>PRT
<213>Chlamydia trachomatis
<400>168
Leu Gln Asp Val Val Arg Ala Met Arg Phe Thr Thr Cys Leu Gly Gly
  1               5                  10                  15
Thr Gly Ile Arg Ala Ala Thr Lys Gly Tyr Ser Ser Ala Gly Lys Thr
            20                  25                  30
Gly Thr Thr Glu Lys Leu Val Asp Gly Lys Tyr Asp Lys Lys Arg His
        35                  40                  45
Ile Ala Ser Phe Ile Gly Leu Thr Pro Ile Ala Ala Leu Ser Asp Thr
    50                  55                  60
Ala Val Pro Leu Val Ile Leu Val Ser Ile Asp Asp Pro Ala Tyr Gly
65                  70                  75                  80
Val Arg Glu Asp Arg Thr Lys Asn Tyr Met Gly Gly Arg Cys Ala Ala
                85                  90                  95
Pro Val Phe Ser Arg Ile Ala Ser Arg Val Leu Pro Tyr Leu Gly Val
            100                 105                 110
Pro Leu Asp Glu Gln Leu His Thr Tyr Arg Glu Glu Val Ser Gln Leu
        115                 120                 125
Lys Leu Leu Tyr Glu Glu Trp Asn Arg Lys
    130                 135
<210>169
<211>483
<212>PRT
<213>Chlamydia trachomatis
<400>169
Met His Leu Asp Gln Leu Leu Arg Asn Ile Pro Ala Lys Ile Tyr Gly
  1               5                  10                  15
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Sequence Listing

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Lys Val Glu Ser Ile Pro Val Arg Asn Leu Thr Arg Asp Ser Arg Cys
            20                  25                  30
Val Gly Val Gly Asp Ile Phe Ile Ala Arg Gln Gly Gln Phe Cys Asn
        35                  40                  45
Gly Asn Asp Tyr Ser Ser Gln Ala Val Ala Asn Gly Ala Ile Ala Val
    50                  55                  60
Leu Ser Ser Leu Tyr Asn Pro Phe Leu Ser Val Val Gln Ile Ile Ala
65                  70                  75                  80
Glu Asp Pro Ile Ala Leu Glu Ala Ser Leu Ala Ala Arg Phe Tyr Asn
                85                  90                  95
Asn Pro Ser Lys His Leu Asp Val Ile Gly Ile Thr Gly Thr Asn Gly
            100                 105                 110
Lys Thr Thr Val Ser Cys Leu Val Arg Glu Leu Met Glu Arg Ser Gly
        115                 120                 125
Ile Arg Thr Gly Leu Ile Gly Thr Ile Glu His Ile Leu Gly Glu Asn
    130                 135                 140
Arg Ile Val Asp Ser Phe Thr Thr Pro Asp Ala Ile Leu Leu Gln Lys
145                 150                 155                 160
Tyr Phe Ala Glu Met Val Lys Gln Asn Leu Ser Ala Ala Val Met Glu
                165                 170                 175
Val Ser Ser Ile Gly Met Ala Leu Gly Arg Val Arg Glu Thr Glu Phe
            180                 185                 190
Leu Ala Gly Val Leu Thr Asn Ile Thr Ser Asp His Leu Asp Phe His
        195                 200                 205
Gly Ser Leu Glu Glu Tyr Ile Ala Ala Lys Lys Gln Phe Phe Ala Ser
    210                 215                 220
Leu Pro Glu Lys Gly Ile Ala Val Val Asn Leu Asp Cys Glu Tyr Ala
225                 230                 235                 240
Pro Ser Phe Leu Asn Gly Ser Gln Ala Arg Ala Val Ser Tyr Ala Ile
                245                 250                 255
His Gln Glu Ala Asp Tyr Arg Ala Asp Arg Leu Lys Leu Tyr Ser Ser
            260                 265                 270
Gly Ser Ser Tyr Asp Ile Trp Tyr Gln Gly Lys Val Phe Pro Cys Glu
        275                 280                 285
Thr Ser Leu Ile Gly Glu His Asn Val Tyr Asn Val Leu Ala Ser Leu
    290                 295                 300
Ala Val Val His Gln Phe Leu Gly Gly Asp Phe Ala Asp Leu Val Arg
305                 310                 315                 320
Asp Val Arg Phe Leu Ser Ala Pro Lys Gly Arg Leu Asp Pro Ile Leu
                325                 330                 335
Leu Gly Pro Phe Pro Val Tyr Ile Asp Tyr Ala His Thr Pro Asp Ala
            340                 345                 350
Leu Asp Asn Val Cys Arg Ile Leu Leu Gln Leu Leu Pro Lys Tyr Gly
        355                 360                 365
Arg Leu Ile Ile Val Phe Gly Cys Gly Gly Asp Arg Asp Arg Val Lys
    370                 375                 380
Arg Pro Leu Met Ala Lys Val Ser Glu His Tyr Gly Phe Ser Phe Val
385                 390                 395                 400
Thr Ser Asp Asn Pro Arg Thr Glu Asp Pro Asp Gln Ile Ile Ala Asp
                405                 410                 415
Ile Cys Lys Gly Phe Ser Thr Asp His Tyr Val Val Glu Ser Asp Arg
            420                 425                 430
Lys Leu Ala Ile Glu Lys Ala Ile Ser Met Ala Ser Asp Lys Asp Ile
        435                 440                 445
Val Leu Val Ala Gly Lys Gly His Glu Gly Tyr Gln Ile Phe Lys His
    450                 455                 460
Gln Thr Ile Val Phe Asp Asp Arg Glu Val Val Cys Glu Ala Leu Ala
465                 470                 475                 480
Ala Leu Cys
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<210>170

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<211>190
<212>PRT
<213>Chlamydia trachomatis
<400>170
Leu Arg Glu Arg Asp Met Arg Gly Ile Arg Ser Ser Asn Ile Arg Arg
1 5 10 15
Leu Ser Leu Met Ile Glu Arg Leu Cys Val Lys Pro Trp Gln Pro Phe
20 25 30
Val Asn Leu Thr Leu Leu Leu Leu Leu Leu Thr Leu Ser Ser Pro Val
35 40 45
Ser Cys Phe Ala Asp Ala Ala Gly Ile Pro Lys Val Ser Arg Asn Glu
50 55 60
Leu Ile Val Ile Asp Pro Gly His Gly Gly Lys Asp Glu Gly Thr Ala
65 70 75 80
Asp Lys Glu Leu Arg Tyr Lys Glu Lys Thr Leu Ala Leu Ser Ile Ala
85 90 95
Leu Ser Val Gln Gly Cys Leu Arg Arg Met Gly Tyr Lys Thr Ile Met
100 105 110
Thr Arg Ala Thr Asp Val Tyr Val Asp Leu Ser Lys Arg Ala Ala Ile
115 120 125
Ala Asn Gln Asn Lys Ala Asp Val Phe Val Ser Ile His Cys Asn His
130 135 140
Ser Ser Asn Thr Ser Ala Leu Gly Thr Glu Ile Tyr Phe Tyr Asn Asp
145 150 155 160
Lys Asn Ile Leu Arg Thr Arg Lys Ser Glu Ser Leu Gly Lys Arg Ser
165 170 175
Trp Leu Leu Cys Lys Lys Met Glu Leu Tyr Ala Asn Val Lys
180 185 190
<210>171
<211>148
<212>PRT
<213>Chlamydia trachomatis
<400>171
Val Gln Leu Val Gly Arg Phe Cys Ala Phe Met Glu Lys Ile Lys Lys
1 5 10 15
Val Leu Asn Pro Lys Asp Glu Cys Ile Leu Tyr Ala Tyr Ile Ala Val
20 25 30
Phe Arg Asp Ala Arg Val Thr Thr Leu Thr Arg Arg Gln Gln Ala Thr
35 40 45
Met Ala Thr Met Thr Lys Lys Lys Leu Ile Ser Thr Ile Ser Gln Asp
50 55 60
His Lys Ile His Pro Asn His Val Arg Thr Val Ile Gln Asn Phe Leu
65 70 75 80
Asp Lys Met Thr Asp Ala Leu Val Gln Gly Asp Arg Leu Glu Phe Arg
85 90 95
Asp Phe Gly Val Leu Gln Val Val Glu Arg Lys Pro Lys Val Gly Arg
100 105 110
Asn Pro Lys Asn Ala Ala Val Pro Ile His Ile Pro Ala Arg Arg Ala
115 120 125
Val Lys Phe Thr Pro Gly Lys Arg Met Lys Arg Leu Ile Glu Thr Pro
130 135 140
Thr Lys Ser Ser
145
<210>172
<211>432
<212>PRT
<213>Chlamydia trachomatis
<400>172
Ser Ser Ser Leu Phe Pro Ala Leu Leu Ser Ile Val Glu Ser Gly Phe
1 5 10 15
Ser Val Ser Lys Leu Asp Ser Lys Phe Pro Gln Asp Tyr Phe Leu Pro

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                20                  25                  30
Leu Asp Val Phe Leu Leu Thr Met Leu Val Glu Ser Gln Leu Gly Leu
            35                  40                  45
Glu Asp Val Leu Glu Ala Phe Ser Glu Arg Asn Phe Asp Ile Gln Ser
        50                  55                  60
Lys Ser Leu Ile Glu Ser Phe Gln Asp Lys Lys Leu Arg Arg Thr Val
65                  70                  75                  80
Ile Gln Arg Phe Leu His His Pro Leu Leu His Ile His Asp Ile Ala
                85                  90                  95
Arg Ala Ala Tyr Leu Leu Ala Ala Leu Glu Glu Gly Val Asp Leu Gly
            100                 105                 110
Tyr Gln Phe Leu Cys Met His Gln Thr Gln Ser Gly Ala Ala Leu Leu
        115                 120                 125
Phe Arg Arg Ala Gly Phe Leu Trp Gly Gly Leu Pro Tyr Pro Gly Glu
    130                 135                 140
His Ala Glu Met Ala Met Leu Leu Ser Arg Ile Ala Glu Phe Tyr Asp
145                 150                 155                 160
Thr Ser Tyr Glu Gln Val Gln Lys Met Ile Ala Phe Gln His Ala Leu
                165                 170                 175
Phe Ser His Glu Arg Asn Ile Phe Pro Ala Leu Trp Ser Gln Glu Gly
            180                 185                 190
Ser Arg Ser Asn Gln Glu Lys Thr Ala Val Ser Lys Leu Leu Phe Cys
        195                 200                 205
Gln Lys Glu Ala Arg Ile Glu Asp Gln Phe Thr Leu Thr Asp Met Ser
    210                 215                 220
Leu Gly Phe Trp Met Arg Arg Thr Pro Ser Phe Ser Ala Tyr Val Ser
225                 230                 235                 240
Gly Ser Gly Cys Lys Ser Gly Val Gly Ala Phe Leu Ile Gly Asp Val
                245                 250                 255
Gly Val Leu Asn Tyr Gly Pro Cys Val Gly Asp Pro Gly Glu Cys Leu
            260                 265                 270
Gly Phe Gly Leu Cys Gly Gln Val Lys Glu Phe Ser Cys Gln Glu Lys
        275                 280                 285
Asp Glu Glu Val Ser Ile Ser Phe Ala Gly Ala Leu Ser Gln Pro Ser
    290                 295                 300
Ser Arg Arg Thr Gly Phe Ser Tyr Leu Gln Asp Ala Leu Phe Ser Thr
305                 310                 315                 320
Asn Ser Cys Tyr Arg Ile Asp Ile Thr Glu Gln Lys Cys His Val Ala
                325                 330                 335
Ser Ser Leu Asp Arg Glu Asn Gln Asp Ala Phe Phe Ala Ile Phe Cys
            340                 345                 350
Lys Gly Ser Gln Cys Gln Val Cys Asn Gly Pro Lys Leu Arg Thr Gly
        355                 360                 365
Ser Pro Asp Ser Tyr Lys Gly Pro Ala Tyr Asp Val Leu Ile Lys Gly
    370                 375                 380
Glu Lys Glu Thr Val Arg Ile Leu Ser Ser Ser Pro His Met Glu Ile
385                 390                 395                 400
Phe Ser Leu Gln Gly Lys Asp Arg Phe Trp Gly Ser Asn Phe Leu Ile
                405                 410                 415
Asn Leu Pro Tyr Thr Gln Asn Ser Ile Asn Ile Leu Phe Glu Lys Ala
            420                 425                 430
<210>173
<211>231
<212>PRT
<213>Chlamydia trachomatis
<400>173
Ser Cys Ser Cys Arg Arg Phe Ala Lys Ile Gln Xaa Gln Arg Phe Met
  1               5                  10                  15
Leu Ile Gly Gln Glu Lys Gly Cys Asp Thr Lys Ser Arg Met His Arg
            20                  25                  30
Asn Phe Gly Met Leu Cys Pro Glu Gly Phe Arg Lys Ala Leu Arg Leu
```

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```
          35                  40                  45
Ala Lys Met Ala Glu Lys Phe Gly Leu Pro Ile Ile Phe Leu Val Asp
     50                  55                  60
Thr Pro Gly Ala Phe Pro Gly Leu Thr Ala Glu Glu Arg Gly Gln Gly
 65                  70                  75                  80
Trp Ala Ile Ala Thr Asn Leu Phe Glu Leu Ala Arg Leu Ala Thr Pro
                 85                  90                  95
Ile Ile Val Ile Val Ile Gly Glu Gly Cys Ser Gly Gly Ala Leu Gly
            100                 105                 110
Met Ala Ile Gly Asp Val Val Ala Met Leu Glu His Ser Tyr Tyr Ser
        115                 120                 125
Val Ile Ser Pro Glu Gly Cys Ala Ser Ile Leu Trp Lys Asp Pro Lys
    130                 135                 140
Lys Asn Ser Asp Ala Ala Ala Met Leu Lys Met His Gly Glu Asp Leu
145                 150                 155                 160
Lys Gly Phe Ala Ile Val Asp Ala Val Ile Lys Glu Pro Ile Gly Gly
                165                 170                 175
Ala His His Asn Pro Ala Ala Thr Tyr Arg Ser Val Gln Glu Tyr Val
            180                 185                 190
Leu Gln Glu Trp Val Lys Leu Lys Asp Leu Pro Val Glu Glu Leu Leu
        195                 200                 205
Glu Lys Arg Tyr Gln Lys Phe Arg Thr Ile Gly Leu Tyr Glu Thr Ser
    210                 215                 220
Ser Glu Ser Asp Ser Glu Ala
225                 230
<210>174
<211>646
<212>PRT
<213>Chlamydia trachomatis
<400>174
Met Lys Leu Leu Leu Lys Ala Ile Leu Arg His Lys Lys His Leu Val
  1                 5                  10                  15
Leu Phe Gly Phe Ser Leu Leu Ser Ile Leu Gly Leu Thr Ile Thr Ser
             20                  25                  30
Gln Ala Glu Ile Phe Ser Leu Gly Leu Ile Ala Lys Thr Gly Pro Asp
         35                  40                  45
Thr Phe Leu Leu Phe Gly Lys Gln Glu Gly Ala Ser Leu Val Lys Arg
     50                  55                  60
Lys Glu Leu Ser Lys Asp Gln Leu Leu Glu Gln Trp Asp Asn Ile Val
 65                  70                  75                  80
Gly Glu Gly Asp Thr Leu Ser Leu Pro Gln Ala Asn Ala Tyr Ile Ala
                 85                  90                  95
Lys His Ser Gly Gly Ser Gln Ser Ile Thr Lys Arg Leu Ser Ala Tyr
            100                 105                 110
Leu Ser Gly Cys Phe Asp Phe Ser Arg Leu Gln Cys Leu Ala Leu Phe
        115                 120                 125
Leu Val Val Val Ala Ile Leu Lys Ser Thr Thr Leu Phe Phe Gln Arg
    130                 135                 140
Phe Leu Ala Gln Leu Ile Ala Ile Arg Val Ser Cys Ser Leu Arg Lys
145                 150                 155                 160
Asp Tyr Phe Leu Ala Leu Gln Thr Leu Pro Met Thr Phe Phe His Ala
                165                 170                 175
His Asp Met Gly Asn Leu Ser Ser Arg Val Ile Ala Asp Ser Ser Met
            180                 185                 190
Ile Ala Leu Ala Ile Asn Ala Leu Met Val Asn Tyr Ile Gln Ala Pro
        195                 200                 205
Ile Thr Met Thr Leu Ala Leu Val Val Cys Leu Ser Ile Ser Trp Lys
    210                 215                 220
Phe Cys Ala Cys Val Cys Leu Ala Phe Pro Ile Phe Ile Leu Pro Ile
225                 230                 235                 240
Val Ile Ile Ala Lys Lys Val Lys Ala Leu Ala Lys Arg Ile Gln Lys
```

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```
                245                 250                 255
Ser Gln Asp His Ser Ala Ala Ala Leu Leu Asp Phe Leu Leu Gly Ile
            260                 265                 270
Leu Thr Val Lys Val Phe Arg Thr Glu Gln Phe Ser Phe Ser Lys Tyr
        275                 280                 285
Cys Gln Lys Asn Asp Glu Ile Ala Arg Leu Glu Glu Arg Ser Ala Val
    290                 295                 300
Tyr Ser Leu Ile Pro Arg Pro Leu Leu His Thr Ile Ala Ser Leu Phe
305                 310                 315                 320
Phe Ala Leu Val Ile Met Ile Gly Leu Tyr His Phe His Ile Pro Pro
                325                 330                 335
Glu Glu Leu Val Val Phe Cys Gly Leu Leu Tyr Leu Ile Tyr Asp Pro
            340                 345                 350
Ile Lys Lys Phe Ala Asp Glu Asn Ala Asn Ile Met Arg Gly Cys Ala
        355                 360                 365
Ala Ala Glu Arg Phe Tyr Glu Val Leu Asp Leu Ala Lys Gln Gln Ser
    370                 375                 380
Asn Val Ser Glu Lys Leu Asn Glu Phe Gln Gly Leu Gln His Ser Ile
385                 390                 395                 400
Gln Phe Cys Asn Val Ser Phe Gly Tyr Val Glu Asp Ser Pro Val Leu
                405                 410                 415
Ser Asp Phe Asn Leu Val Leu Lys Lys Gly Glu Ala Ile Gly Ile Val
            420                 425                 430
Gly Pro Thr Gly Ser Gly Lys Ser Thr Ile Ala Lys Leu Leu Pro Arg
        435                 440                 445
Leu Tyr Glu Val Ser His Gly Glu Leu Leu Ile Asp Ser Leu Pro Ile
    450                 455                 460
Gln Ser Tyr Cys Lys Asn Ser Leu Arg Lys His Ile Gly Cys Val Leu
465                 470                 475                 480
Gln His Pro Phe Leu Phe Tyr Asp Thr Val Trp Asn Asn Leu Thr Cys
                485                 490                 495
Gly Arg Thr Phe Leu Glu Glu Glu Val Phe His Ala Leu Lys Gln Ala
            500                 505                 510
His Ala Tyr Glu Phe Val Ser Lys Met Pro Gln Gly Val His Ser Leu
        515                 520                 525
Leu Glu Glu Ser Gly Lys Asn Leu Ser Gly Gly Gln Gln Gln Arg Leu
    530                 535                 540
Thr Ile Ala Arg Ala Leu Leu His Asn Thr Ser Ile Leu Leu Leu Asp
545                 550                 555                 560
Glu Ala Thr Ser Ala Leu Asp Ala Ile Ser Glu Asn Tyr Val Lys Glu
                565                 570                 575
Ile Val Gly Gln Leu Lys Gly Arg Cys Thr Gln Ile Ile Ile Ala His
            580                 585                 590
Lys Leu Ser Thr Leu Glu Tyr Val Asp Arg Ile Val Tyr Leu Glu Gln
        595                 600                 605
Gly Lys Lys Ile Ala Glu Gly Thr Lys Glu Glu Leu Leu Asp Ser Cys
    610                 615                 620
Pro Ala Phe Gln Arg Met Trp Val Leu Ser Gly Ala Lys Asp Trp Glu
625                 630                 635                 640
Leu Asn Ala Val Val Lys
                645
```

<210>175
<211>219
<212>PRT
<213>Chlamydia trachomatis
<400>175

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Gln Lys Lys Pro Leu Thr Ser Leu Leu Ser Asp Gly Lys Leu Phe Leu
  1               5                  10                  15
His Tyr Gly Arg Leu Val Val Met Phe Lys Leu Leu Leu Ile Phe Ala
             20                  25                  30
Asp Pro Ala Glu Ala Ala Arg Thr Leu Ser Leu Phe Pro Phe Ser Leu
```

Search - 6 2 2 2 2 2 6 9

```
          35                  40                  45
Asn Lys Glu Asn Phe Tyr Thr Tyr His Thr Glu Asn Val Leu Leu Asp
      50                  55                  60
Val Met Val Leu Lys Thr Trp Gly Tyr Arg Gly Val Val Gln Ala Leu
 65                  70                  75                  80
Ser Pro Pro Pro Ser Gly Tyr Asp Leu Trp Ile Asn Ala Gly Phe Ala
                 85                  90                  95
Gly Ala Ala Asn Pro Asn Ile Pro Leu Leu Lys Thr Tyr Thr Ile Thr
            100                 105                 110
Ser Val Lys Glu Leu Thr Pro Thr Thr Ser Val Glu Glu Glu Leu Glu
        115                 120                 125
Val Thr Pro Ile Pro Arg Leu Pro Leu Ala Gln Leu Thr Ser Val Arg
    130                 135                 140
Ser Pro Tyr Arg Asp Gly Phe His Glu His Leu Gln Leu Val Asp Met
145                 150                 155                 160
Glu Gly Phe Phe Ile Ala Lys Gln Ala Ser Leu Val Ala Cys Pro Cys
                165                 170                 175
Ser Met Ile Lys Val Ser Ser Asp Tyr Thr Thr Arg Glu Gly Gln Asp
            180                 185                 190
Phe Leu Lys Asn Asn Lys Val Lys Leu Ser Gln Lys Leu Ala Glu Ala
        195                 200                 205
Ile Phe Pro Ile Tyr Ser Ser Phe Ile Asp Val
    210                 215
<210>176
<211>256
<212>PRT
<213>Chlamydia trachomatis
<400>176
Met Thr Phe Ser Ala Ala Phe Ser Pro Cys Pro Asn Asp Ile Phe Leu
  1                 5                  10                  15
Phe Arg Ser Phe Leu Glu Lys His Lys Gly Phe Pro Ser Leu Arg Gln
             20                  25                  30
Ile Met Ile Ala Asp Ile Ser Ser Leu Asn Tyr Tyr Ala Leu Glu Thr
         35                  40                  45
Arg Phe Pro Leu Ile Lys Ile Ser Ala Ser Leu Tyr Pro Gln Ile Ala
     50                  55                  60
Asp Ser Tyr Asp Val Leu Asn Val Gly Thr Thr Leu Gly Tyr Lys Ile
 65                  70                  75                  80
Gly Pro Leu Ile Leu Ser Lys Gln Leu Asp Ser Pro Leu Lys Ser Leu
                 85                  90                  95
Ala Thr Pro Gly Glu Thr Thr Thr Ala His Ala Leu Cys Arg Leu Phe
            100                 105                 110
Tyr Pro Arg Ala Glu Leu Val Pro Met Lys Tyr His Glu Ile Ile Pro
        115                 120                 125
Ala Ile Leu Ser Asn Arg Val Asp Gly Gly Ala Val Ile His Glu Glu
    130                 135                 140
Arg Phe Ser Phe Pro Lys Asp Leu Cys Ile Val Glu Asp Leu Gly Gln
145                 150                 155                 160
Leu Trp Glu Lys Thr Trp His Leu Pro Leu Pro Leu Gly Cys Ile Val
                165                 170                 175
Ile Ser Lys Lys Val Ser Asp Asp Asp Ser Tyr Leu Leu Ser His Ala
            180                 185                 190
Leu Gln Glu Ser Leu Lys Lys Ser Leu Thr Asp Ser Ala Leu Ala Ile
        195                 200                 205
Gln Lys Ala Ser Glu Tyr Ser Arg Asp Lys Asn Pro Thr Thr Ile Gln
    210                 215                 220
His Phe Ile Asp Thr Tyr Val Thr Glu Glu Thr Phe Asn Leu Ser Ser
225                 230                 235                 240
Ile Gly Arg Gln Ala Phe Ser Thr Leu Trp Thr Ala Cys Arg Asn Val
                245                 250                 255
<210>177
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<211>399
<212>PRT
<213>Chlamydia trachomatis
<400>177

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Met Thr Thr Trp Thr Leu Asn His Asn Asn Leu Thr Lys Phe Leu Thr
  1               5                  10                  15
His Ala Gln Leu Glu Pro Ser Leu Glu Arg Glu Ser Gly Leu Ile Tyr
            20                  25                  30
Ile Thr Val Pro Ala Gly Glu His Glu Leu Pro Leu Phe Phe Val Ile
        35                  40                  45
Arg Asn Glu Gly Glu Val Leu Gln Leu Val Cys Tyr Phe Pro Tyr Gln
    50                  55                  60
Ile Gln Gln Asn Gln Arg Asp Thr Thr Ala Arg Leu Leu His Leu Val
65                  70                  75                  80
Asn Arg Asp Ile Asp Ile Pro Gly Phe Gly Met Asp Glu Glu Gln Asn
                85                  90                  95
Ile Ile Phe Tyr Arg Leu Val Ile Pro Cys Leu Lys Gly Glu Ile Asn
            100                 105                 110
Glu Asp Leu Leu Arg Val Tyr Ile Asp Thr Ile Lys Leu Ile Cys Asp
        115                 120                 125
Ser Phe Phe His Ala Ile Gly Leu Ile Ser Thr Gly Asn Met Asp Leu
    130                 135                 140
Asp Glu Leu Lys Lys Gln Ala Lys Leu Glu Asn Asn Gln Ser Asp Gln
145                 150                 155                 160
Leu Glu Pro Leu Glu Glu Leu Val Pro Ala Leu Ile Phe Tyr Asp Thr
                165                 170                 175
Glu Thr Thr Gly Thr Gln Ile Asp Lys Asp Arg Ile Val Glu Leu Ala
            180                 185                 190
Ala Tyr Asn Gly Thr Thr Ser Glu Ser Phe Gln Thr Leu Val Asn Pro
        195                 200                 205
Glu Ile Pro Ile Pro Ala Glu Ala Thr Lys Ile His Gly Ile Thr Thr
    210                 215                 220
Ala Glu Val Ala Asp Ala Pro Arg Phe Pro Glu Ala Tyr Gln Lys Phe
225                 230                 235                 240
Ile Glu Phe Cys Gly Thr Asp Asn Ile Leu Val Ala His Asn Asn Asn
                245                 250                 255
Ala Phe Asp Tyr Pro Leu Leu Val Arg Glu Cys Arg Arg His Gly Leu
            260                 265                 270
Ser Glu Pro Gln Leu Arg Thr Ile Asp Ser Leu Lys Trp Ala Lys Lys
        275                 280                 285
Tyr Arg Thr Asp Leu Pro Gln His Ser Leu Gln Tyr Leu Arg Gln Val
    290                 295                 300
Tyr Gly Phe Glu Glu Asn Gln Ala His Arg Ala Leu Asp Asp Val Ile
305                 310                 315                 320
Thr Leu Tyr Arg Val Phe Ser Ala Leu Val Gly Asp Leu Ser Pro Asp
                325                 330                 335
Gln Ile Tyr Asp Leu Leu Asn Glu Thr Cys His Pro Arg Ile Phe Lys
            340                 345                 350
Met Pro Phe Gly Lys Tyr Lys Gly Lys Pro Leu Ser Glu Val Pro Ser
        355                 360                 365
Ser Tyr Ile Ala Trp Leu Gln Lys Gly Asp Tyr Leu Leu Gln Pro Glu
    370                 375                 380
Asn Lys Glu Ile Lys Ala Ala Ile Glu Ala Tyr Gln Gln Leu Lys
385                 390                 395
```

<210>178
<211>254
<212>PRT
<213>Chlamydia trachomatis
<400>178

```
Leu Gly Gly Glu Gly Val Met Ile Val Ala Asp Phe Glu Tyr Phe Gly
  1               5                  10                  15
```

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Leu Ser Asp Val Gly Leu Val Arg His Asn Asn Glu Asp Phe Trp Gln
                20                  25                  30
Val Asn Tyr Asp Ser Gln Leu Ile Ala Ile Ala Asp Gly Met Gly Gly
            35                  40                  45
His Arg Ala Gly Ala Val Ala Ser Tyr Glu Ala Val Gly Asn Leu Met
        50                  55                  60
Gln Leu Val Asp Leu His Lys Val Asp Leu Glu Arg Phe Gly Asp Glu
65                  70                  75                  80
Gln Tyr Lys Glu Ser Ile Lys Thr Ile Val Ser Glu Val Asn Leu Leu
                85                  90                  95
Ile Tyr Arg Gln Gly Leu Ser Asn Glu Glu Phe Lys Gly Met Gly Thr
            100                 105                 110
Thr Leu Ser Cys Met Gln Phe Arg Arg Gly Lys Ala Trp Leu Phe His
        115                 120                 125
Val Gly Asp Cys Arg Val Tyr Arg Leu Arg Asn Lys Met Leu Glu Arg
    130                 135                 140
Leu Thr Glu Asp His Ser Leu Ala Asn His Leu Ala Ser Arg Tyr Gly
145                 150                 155                 160
Leu Ser Lys Gln Ser Val Lys Arg Tyr Pro Gly Arg Asn Val Leu Thr
                165                 170                 175
Asn Val Leu Gly Ser Arg Pro His Val Ser Leu Asp Ile Arg Glu Met
            180                 185                 190
Ser Tyr Glu Lys Glu Asp Leu Phe Val Phe Cys Ser Asp Gly Leu Thr
        195                 200                 205
Ser Ala Val Ser Asp His Asp Met Leu Asp Ile Leu Thr Gln Thr Thr
    210                 215                 220
Thr Leu Glu Glu Gly Gly Asn Ile Leu Ile Ser Leu Ala Asn Ser Arg
225                 230                 235                 240
Gly Gly Arg Asp Asn Ala Thr Val Ile Leu Val Arg Met Arg
                245                 250
```

<210>179
<211>374
<212>PRT
<213>Chlamydia trachomatis
<400>179

```
Met Thr Ile Tyr Leu Asp Thr Asn Ala Ser Ala Leu Leu Glu Pro Gly
  1               5                  10                  15
Val Leu Met Cys Leu His Ser Leu Phe Ile Gly Glu Gly Gly Phe Gly
            20                  25                  30
Asn Pro Ser Ser Val His Ser Phe Gly Lys Lys Thr Lys Lys Leu Val
        35                  40                  45
Lys Glu Thr Ser Thr Leu Ile Glu Lys Ala Leu Gly Phe Ser His Cys
    50                  55                  60
Arg Val Ile Tyr Thr Ser Gly Ala Thr Glu Ser Leu Asn Leu Ala Ile
65                  70                  75                  80
Gln Asn Ile Pro Thr Gly Ser His Val Ile Thr Ser Ser Met Glu His
                85                  90                  95
Pro Ala Val Ile Glu Pro Leu Lys Gln Ala Lys Leu Ser Val Thr Tyr
            100                 105                 110
Leu Asp Pro Ile Pro Gly Glu Cys Val Val Ser Leu Glu Gln Ile Lys
        115                 120                 125
Glu Ala Val Gln Ser Asp Thr Ser Ala Ile Val Leu Gly Trp Val Asn
    130                 135                 140
Ser Glu Val Gly Val Arg Ile Asp Leu Glu Ala Ile Ala Glu Phe Ala
145                 150                 155                 160
Lys Glu Arg Gln Leu Leu Leu Ile Val Asp Ala Thr Ala Ile Val Gly
                165                 170                 175
Lys Glu Val Ile His Ile Pro Glu Gly Val Ser Met Val Ala Phe Ser
            180                 185                 190
Gly His Lys Phe His Ala Leu Ser Gly Ile Gly Val Leu Leu Thr Ser
        195                 200                 205
```

```
Pro Lys Ile Lys Ile Ser Pro Ile Ile Ser Gly Gly Gly Gln Gln Gly
    210                 215                 220
Gly Ile Arg Ser Gly Thr Glu His Ile His Gly Ile Ala Ser Leu Arg
225                 230                 235                 240
Tyr Ile Phe Ser Lys Leu Leu Val Glu Gln Pro Ala Ile Ala Gln Thr
                245                 250                 255
Met Arg Ser Tyr Arg Asp Leu Phe Glu Ser Arg Ile Gln Glu Ala Phe
            260                 265                 270
Pro Glu Cys Ile Val His Cys Gln Asp Lys Pro Arg Val Ser Asn Leu
        275                 280                 285
Ser Ala Ile Ala Phe Pro Gly Leu Glu Gly Glu Val Met Gln Ile Ala
    290                 295                 300
Leu Asp Leu Glu Gly Val Ala Cys Gly Tyr Gly Ser Ala Cys Ser Ser
305                 310                 315                 320
Gly Ala Thr Thr Val Phe Lys Ser Leu Thr Val Met Lys Val Pro Gln
                325                 330                 335
Asp Leu Ala Val Ala Thr Leu Arg Phe Ser Phe Ser Tyr Leu Leu Ser
            340                 345                 350
Glu Glu Glu Ile Leu Thr Ala Ala Gln Arg Val Ile Arg Val Val Lys
        355                 360                 365
His Leu Gln Gln Tyr Ala
    370
<210>180
<211>404
<212>PRT
<213>Chlamydia trachomatis
<400>180
Met Glu Thr Asn Ser Pro Phe Phe Trp Leu Gly Val Asn Leu Leu Cys
  1                 5                  10                  15
Ile Phe Val Gln Gly Phe Phe Ser Met Met Glu Met Ala Cys Val Ser
             20                  25                  30
Phe Asn Arg Val Arg Leu Gln Tyr Tyr Leu Thr Lys Ser Asn Lys Lys
         35                  40                  45
Ala Ser Tyr Ile Asn Phe Leu Ile Arg Arg Pro Tyr Arg Leu Phe Gly
     50                  55                  60
Thr Val Met Leu Gly Val Asn Ile Ala Leu Gln Ile Gly Ser Glu Ser
 65                  70                  75                  80
Ser Arg Thr Cys Tyr Lys Leu Leu Gly Ile Ser Pro Glu Tyr Ala Pro
                 85                  90                  95
Ala Thr Gln Ile Ile Leu Val Val Ile Phe Ala Glu Leu Ile Pro Leu
            100                 105                 110
Ala Ile Ser Arg Lys Ile Pro Glu Lys Ile Ala Leu Lys Gly Ala Pro
        115                 120                 125
Ile Leu Tyr Phe Ala His Tyr Leu Phe Tyr Pro Leu Ile Gln Cys Val
    130                 135                 140
Gly Gly Ile Thr Asn Met Ile Tyr Phe Ile Leu Asn Ile Lys Glu Glu
145                 150                 155                 160
Thr Ile His Ser Thr Leu Ser Arg Asp Glu Leu Gln Lys Thr Leu Glu
                165                 170                 175
Thr His His Glu Glu His Asp Phe Asn Val Ile Ala Thr Asn Ile Phe
            180                 185                 190
Ser Leu Ser Ala Thr Ser Val Glu Gln Val Cys Gln Tyr Leu Asp Gln
        195                 200                 205
Ile Pro Ile Leu Ser Ala Thr Ala Ser Val Arg Asp Val Cys Gln Leu
    210                 215                 220
Val Arg Arg His Arg Leu Asp Phe Val Pro Val Tyr His Lys Val Lys
225                 230                 235                 240
Lys Asn Val Val Gly Ile Ala Phe Pro Lys Asn Leu Ile Asn Arg Asn
                245                 250                 255
Pro Ser Asp Pro Val Val Pro Tyr Leu Ser Ser Pro Trp Phe Ile Thr
            260                 265                 270
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Ala Lys Ser Lys Leu Ile His Ala Ile Gln Glu Phe Arg Lys Asn Ser
        275                 280                 285
Ser Lys Ile Ala Ile Val Leu Asn Asn Asn Gly Glu Pro Met Gly Val
    290                 295                 300
Leu Gly Leu His Thr Val Phe Lys Thr Leu Phe Asn Thr Arg Asn Ile
305                 310                 315                 320
Thr Gln Leu Lys Pro Lys Pro Thr Ser Leu Ile Glu Arg Thr Phe Ser
                325                 330                 335
Gly Asn Thr Pro Leu Ser Glu Ile Glu Asn Glu Leu Asp Ile Ile Phe
            340                 345                 350
Met Asp Asn Asp Cys Thr Thr Ile Glu Gln Leu Met Leu Lys Leu Leu
        355                 360                 365
Asp Thr Pro Pro Glu Val Gly Ala Ser Ile Ile Ile Asn Asp Leu Leu
    370                 375                 380
Leu Glu Val Lys Glu Ile Ser Leu Tyr Gly Ile Lys Thr Val Ala Ile
385                 390                 395                 400
Lys Asp Thr Leu

<210>181
<211>283
<212>PRT
<213>Chlamydia trachomatis
<400>181
Lys Phe Arg Pro Ile Phe Asp Trp Ala Ile Ser Gly Ile Asn Phe Ile
  1                 5                  10                  15
Val Gln Lys Met Leu Ala Arg Gln Glu Ser Asp Phe Ile Gln Pro Gln
             20                  25                  30
Glu Leu Lys Glu Val Leu Arg Ser Cys Lys Asp Phe Gly Val Val Asn
         35                  40                  45
His Glu Glu Ser Arg Leu Leu Phe Gly Tyr Leu Ser Met Glu Glu Gly
     50                  55                  60
Ser Ile Lys Glu Arg Met Thr Pro Lys Gln Glu Ile Ile Phe Tyr Asp
 65                  70                  75                  80
Val Leu Thr Pro Ile Glu Asn Leu Tyr Lys Leu Phe Ser Gly Pro Lys
                 85                  90                  95
Gln Ser Tyr Ser Lys Val Leu Val Cys Lys Gly Gly Leu Gln Asn Leu
            100                 105                 110
Leu Gly Val Cys Ser Ala Lys Leu Leu Leu Leu Tyr Lys Glu Lys Leu
        115                 120                 125
Gln Ser Ala Glu Glu Leu Leu Pro Leu Leu Arg Lys Pro His Tyr Ile
    130                 135                 140
Pro Glu Thr Val Ser Ala Lys Thr Ala Leu Tyr His Leu Ala Gly Glu
145                 150                 155                 160
Asp Cys Gly Leu Gly Ile Ile Ile Asp Glu Tyr Gly Ser Ile Glu Gly
                165                 170                 175
Leu Ile Thr Gln Asn Asp Leu Phe Lys Ile Val Ser Asp Glu Val Ala
            180                 185                 190
His Asn Arg Pro Ser Phe Lys Gln Phe Ala His Ser Asp Lys Asn Val
        195                 200                 205
Val Ile Ala Ala Gly Thr Tyr Glu Leu Ser Asp Phe Tyr Asp Leu Phe
    210                 215                 220
Gly Val Asp Leu Pro Thr Thr Ala Asn Cys Val Thr Ile Gly Gly Trp
225                 230                 235                 240
Leu Thr Glu Gln Leu Gly Glu Ile Pro Glu Thr Gly Thr Lys Phe Ala
                245                 250                 255
Trp Gly Gln Phe Val Phe Gln Ile Leu Asp Ala Ala Pro Asn Cys Val
            260                 265                 270
Lys Arg Val Tyr Ile Arg Lys Thr His Gly Asn
        275                 280
<210>182
<211>174
```

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<212>PRT
<213>Chlamydia trachomatis
<400>182
Ser Gly Ser Ala His Asn Asn Pro Asn Arg Met Phe Ser Ser Ala Ile
1 5 10 15
Val Ile Leu Thr Ala Ile Phe Val Leu Cys Ser Gly Phe Val Ser Leu
20 25 30
Ser His Ile Ala Leu Phe Ser Leu Pro Ser Ser Leu Ile Ala His Tyr
35 40 45
Ser His Ser Lys Asn Arg Gln Leu Arg Gln Ile Ala Asn Leu Met Ala
50 55 60
Tyr Pro Asn His Leu Leu Ile Thr Leu Val Phe Phe Asp Ile Gly Ile
65 70 75 80
Asn Ile Gly Val Gln Asn Cys Ile Ala Thr Leu Val Gly Asp Ser Ala
85 90 95
Ser Leu Leu Leu Thr Val Gly Val Pro Leu Ala Leu Thr Leu Val Leu
100 105 110
Gly Glu Ile Val Pro Lys Val Ile Ala Ile Pro Tyr Asn Ala Arg Ile
115 120 125
Ala Lys Ile Val Thr Pro Ile Ile Phe Ala Ser Thr Lys Ser Ser Ala
130 135 140
Leu Tyr Leu Ile Gly Leu Ser Arg Val Ser Ile Leu Ser Phe Arg Lys
145 150 155 160
Cys Trp Pro Val Lys Lys Val Ile Leu Phe Asn Pro Lys Asn
165 170

<210>183
<211>128
<212>PRT
<213>Chlamydia trachomatis
<400>183
Ile Met Glu Glu Lys Gly Ile Leu Gln Leu Val Glu Ile Ser Arg Ala
1 5 10 15
Met Ala Leu Gln Gly Val Cys Pro Trp Thr Asn Leu Gln Ser Val Glu
20 25 30
Ser Met Leu Gln Tyr Ile Ala Gly Glu Cys Gln Glu Leu Ala Asp Ala
35 40 45
Val Gln Glu Asn Lys Ala Ser Leu Glu Ile Ala Ser Glu Ala Gly Asp
50 55 60
Val Leu Thr Leu Val Leu Thr Leu Cys Phe Leu Leu Glu Arg Glu Gly
65 70 75 80
Lys Leu Lys Ala Glu Glu Val Phe Val Glu Ala Leu Ala Lys Leu Arg
85 90 95
Arg Arg Ser Pro His Val Phe Asp Pro His Asn Gln Ile Ser Leu Glu
100 105 110
Gln Ala Glu Glu Tyr Trp Ala Arg Ile Lys Gln Gln Glu Lys Ile Ser
115 120 125

<210>184
<211>228
<212>PRT
<213>Chlamydia trachomatis
<400>184
Gly His Lys Ile Glu Ser Ile Phe Ser Leu Ser Cys Val Met Arg Lys
1 5 10 15
Phe Trp Leu Leu Ala Ser Phe Gly Leu Leu Ser Leu Thr Thr Thr Thr
20 25 30
Leu Ser Ser Cys Ala Val Ser Asn Ser Gly Ser Tyr Asn Ala Arg Leu
35 40 45
Tyr Thr Lys Gly Ser Lys Ala Lys Gly Val Val Ala Met Leu Pro Val
50 55 60
Phe Tyr Arg Thr Glu Lys Ser Ala Glu Leu Leu Pro Trp Asn Leu Gln
65 70 75 80

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Ala Glu Phe Ser Glu Glu Ile Ser Arg Arg Leu His Ser Ser Asp Lys
85 90 95
Leu Leu Leu Ile Xaa Xaa His Ala Ser Ala Gly Val Ala Ala Gln Phe
100 105 110
Phe Ser Pro Thr Pro Asn Ile Ser Pro Glu Leu Ala Thr Gln Leu Leu
115 120 125
Pro Ala Glu Phe Val Val Ala Ala Glu Ile Leu Glu Gln Lys Thr Thr
130 135 140
Glu Asp Val Leu Asn Pro Ser Ile Ser Ala Ser Val Arg Val Arg Val
145 150 155 160
Phe Asp Ile Arg His Asn Lys Val Ser Met Ile Tyr Gln Glu Ile Leu
165 170 175
Asp Ala Ser Gln Ser Leu Ala Ser Gly Ser Asn Asp Tyr His Arg Tyr
180 185 190
Gly Trp Arg Ser Lys Asn Phe Asp Ser Thr Pro Met Gly Leu Met His
195 200 205
Gln Arg Leu Phe Arg Glu Ile Val Ala Arg Val Glu Gly Tyr Val Cys
210 215 220
Ala Asn Tyr Ser
225
<210>185
<211>220
<212>PRT
<213>Chlamydia trachomatis
<400>185
Val Ile His Trp Asp Gln Ser Arg Thr Leu Leu Ser Phe Pro Arg Val
1 5 10 15
Gly Leu His Leu Ser Trp Tyr Gly Ile Leu Phe Ser Leu Gly Ile Phe
20 25 30
Leu Ser Ser Phe Ser Gly Ile Lys Leu Ala Thr Ala Leu Cys Lys Asp
35 40 45
Arg Glu Glu Lys Lys Glu Leu Arg Thr Ser Leu Glu Asn Phe Ala Leu
50 55 60
Gly Ala Leu Leu Ala Ile Ile Ile Gly Ala Arg Leu Ala Tyr Val Leu
65 70 75 80
Phe Tyr Gly Gly Ser Phe Tyr Phe Glu Asn Pro Ser Glu Ile Ile Lys
85 90 95
Ile Trp Lys Gly Gly Leu Ser Ser His Gly Ala Val Ile Ser Val Val
100 105 110
Ile Trp Ala Ala Val Phe Ser Arg Leu His Ile Arg Lys Leu Pro Met
115 120 125
Leu Ser Val Thr Tyr Ile Cys Asp Leu Cys Gly Ala Val Phe Gly Cys
130 135 140
Ala Ala Leu Leu Ile Arg Val Gly Asn Phe Met Asn Gln Glu Ile Leu
145 150 155 160
Gly Thr Pro Thr Ser Met Pro Trp Gly Val Ile Phe Ser Asn Gly Gly
165 170 175
Gly Gln Ile Pro Arg His Pro Val Gln Leu Tyr Glu Gly Leu Gly Tyr
180 185 190
Leu Val Leu Ser Cys Ile Leu Cys Arg Leu Trp Leu Ser Trp Cys Tyr
195 200 205
Ile Val Trp Val Leu Ala Ile Val Gln Gln Ala Leu
210 215 220
<210>186
<211>92
<212>PRT
<213>Chlamydia trachomatis
<400>186
Thr Ser Cys Ser Ala Leu Arg Arg Pro Trp Leu Phe Ser Ala Phe Leu
1 5 10 15
Tyr Ser Val Gln Ala Leu Ala Ile Val Val Leu Tyr Arg Leu Gly Ser

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            20                  25                  30
Gly Tyr Ser Ala Ala Gly Ala Leu Ile Gly Val Ala Val Ile Arg Phe
        35                  40                  45
Cys Ala Glu Phe Phe Lys Thr His Gln Gly Ala Trp Leu Gly Glu Glu
    50                  55                  60
Asn Ile Leu Thr Ile Gly Gln Trp Leu Ser Ile Pro Met Val Phe Leu
65                  70                  75                  80
Gly Val Gly Ile Ile Trp Ile Ala Ser Lys Lys Lys
                85                  90
```

<210>187
<211>334
<212>PRT
<213>Chlamydia trachomatis
<400>187

```
Glu Arg Gly Phe Pro Pro His Arg Glu Asn Pro Pro Arg Met Arg Met
  1               5                  10                  15
Asn Lys Arg Thr Leu Leu Phe Val Ser Leu Val Ser Ala Ala Phe Leu
            20                  25                  30
Gly Cys Gln Ile Phe Phe Gly Tyr Arg Asp Leu Lys Ser Cys Gln Asp
        35                  40                  45
Leu Ala Glu Lys Gln Arg Ala Ile Ser Glu Gln Ile Leu Ala Ser Thr
    50                  55                  60
Glu Gln Leu Ser Val Val Pro Trp Thr Ala Ser Leu Glu Glu Ser Glu
65                  70                  75                  80
Ser Val Asn Gln Tyr Ala Ile Arg Leu Gly Asn Arg Leu Leu Leu Leu
                85                  90                  95
Thr Lys Gly Gly Ser His Pro Glu Val Tyr Ser Arg Gly Thr Ser Trp
            100                 105                 110
Ser Leu Ile Glu Gln Thr Ser Thr Phe Gly Gly Ile Leu Val Ser Leu
        115                 120                 125
Tyr Gly Glu Thr Gly Gln Glu Val Leu Ser Lys Gly Ser Ser Val Tyr
    130                 135                 140
Leu Pro Asn Gln Arg Asp Ala Phe Pro Val Leu Val Ala Glu Phe Arg
145                 150                 155                 160
Ser Asn Gln Glu Pro Leu Val Phe Leu Gly Glu Tyr Lys Asp Gly Lys
                165                 170                 175
Ile Ala Asn Lys Ala Gly Ala Ile Tyr Gly Thr Ser Leu Val Phe Leu
            180                 185                 190
Asn Thr Gly Asn Glu Phe Val Pro Leu Gly Ile Tyr Asn Ser Lys Glu
        195                 200                 205
Glu Cys Val Glu Ser Leu Asp Leu Pro Met Ala Arg Ala Val Val Phe
    210                 215                 220
Ala Asp Lys Glu Asn Pro Thr Ala Ser Gly Ser Tyr Tyr Met Leu Ser
225                 230                 235                 240
Asn Glu Tyr Met Gln Ile Val Val Ser Gln Glu Ser Gly Ala Ile Glu
                245                 250                 255
Gly Ile Asn Leu Pro Phe Ala Ser Asp Gln Glu Glu Asn Lys Ser Ile
            260                 265                 270
Val Asn Glu Ile Gly Phe Asp Arg Glu Leu Ala Ile Asn Ser Pro Ser
        275                 280                 285
Glu Ala Ser Phe Pro Gly Val Glu Thr Ile Asp Ser Gln Arg Gln Asn
    290                 295                 300
Ile Ala Asn Val Val Gly Gly Tyr Tyr Pro Leu Leu Arg Arg Gly Thr
305                 310                 315                 320
Leu Ser Asp Val Lys Lys Arg Val Pro Ala Gln Tyr Gln Ala
                325                 330
```

<210>188
<211>225
<212>PRT
<213>Chlamydia trachomatis
<400>188

```
Asn Ile Val Ser Gly Arg Glu Leu Ala Ser Pro Val Ala Thr Gly Phe
 1               5                  10                  15
Arg Val Val Ser Phe Asp Asn Lys Thr Leu Ile Leu Glu Ser Gly Asp
            20                  25                  30
Gly Gly Ile Arg Lys Thr Tyr Ser Leu Gly Glu Gln Pro Tyr Ala Phe
        35                  40                  45
Glu Leu Glu Ile Gln Thr Thr Gln Gly Arg Glu Asp Leu Trp Ile Thr
    50                  55                  60
Ser Gly Val Pro Glu Val Glu Ile Met Ser Asn Ala Phe Val Pro Ala
65                  70                  75                  80
Val Lys Tyr His Ala Val Lys Lys Asn Lys Ser Asp Leu Phe Asn Val
                85                  90                  95
Lys Leu Pro Lys Ala Lys Asp Ser Leu Leu Val Arg Asn Asn Ala Thr
            100                 105                 110
Pro Gln Trp Ile Leu Asn Ser Asn Gly Tyr Phe Gly Val Ile Leu Thr
        115                 120                 125
Pro Arg Thr Pro Ile Pro Ala Gly Tyr Ala Ser Ser Phe Ile Pro Gly
    130                 135                 140
Asn Val Val Pro Thr Arg Leu Ser Gln Leu Pro Pro Lys Asp Gln Ala
145                 150                 155                 160
Tyr Pro Ala Ser Lys Tyr Pro Gly Tyr Thr Ala Met Leu Pro Leu Pro
                165                 170                 175
Lys Glu Ala Gly Arg Tyr Gln Phe Met Val Tyr Ala Gly Pro Leu Ala
            180                 185                 190
Asp Pro Thr Leu Lys Thr Leu Asp Arg Leu Thr Arg Ile Leu Lys Glu
        195                 200                 205
Lys Leu Leu Ser Ile Leu Met Arg Leu Leu Ser Glu Gly Ser Leu Val
    210                 215                 220
Leu
225
<210>189
<211>264
<212>PRT
<213>Chlamydia trachomatis
<400>189
Thr Asn Ala Asn Ser Lys Gly Glu Thr Pro Glu Tyr Ile Asp Ala Ile
 1               5                  10                  15
Ala Phe Arg Gly Phe Phe Ser Phe Ile Thr Glu Pro Phe Ala Ala Leu
            20                  25                  30
Leu Phe Val Ile Met Lys Phe Phe Lys Phe Leu Thr Gly Ser Trp Gly
        35                  40                  45
Ile Ser Ile Ile Leu Leu Thr Ile Val Leu Lys Leu Leu Leu Tyr Pro
    50                  55                  60
Leu Asn Ala Trp Ser Ile Arg Ser Met Arg Arg Met Gln Lys Leu Ser
65                  70                  75                  80
Pro Tyr Ile Gln Glu Ile Gln Gln Lys Tyr Lys Arg Glu Pro Lys Arg
                85                  90                  95
Ala Gln Met Glu Ile Met Ala Leu Tyr Lys Met Asn Lys Val Asn Pro
            100                 105                 110
Ile Thr Gly Cys Leu Pro Leu Leu Ile Gln Ile Pro Phe Leu Ile Ala
        115                 120                 125
Met Phe Asp Leu Leu Lys Ser Ser Phe Leu Leu Arg Gly Ala Ser Phe
    130                 135                 140
Ile Pro Gly Trp Ile Asp Asn Leu Thr Ala Pro Asp Val Leu Phe Ser
145                 150                 155                 160
Trp Glu Thr Pro Ile Trp Phe Ile Gly Lys Glu Phe His Leu Leu Pro
                165                 170                 175
Ile Leu Leu Gly Val Val Met Phe Ala Gln Gln Lys Ile Ser Ala Val
            180                 185                 190
Lys Arg Ser Gly Pro Ala Ser Asp Gln Gln Arg Gln Gln Glu Ala Met
        195                 200                 205
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Gly Thr Met Met Ala Leu Leu Phe Thr Phe Met Phe Tyr Asn Phe Pro
210 215 220
Ser Gly Leu Asn Ile Tyr Trp Phe Ser Ser Met Leu Leu Gly Val Ile
225 230 235 240
Gln Gln Trp Val Thr Asn Lys Ile Leu Asp Glu Gln His Leu Gln His
245 250 255
Glu Val Ile Ile Asn Lys Lys Arg
260

<210>190
<211>459
<212>PRT
<213>Chlamydia trachomatis
<400>190
Asp Ser Phe Met Arg Ala Trp Glu Glu Phe Leu Leu Leu Gln Glu Lys
1 5 10 15
Glu Ile Gly Val Asp Thr Val Asn Lys Trp Leu Arg Ser Leu Lys Val
20 25 30
Leu Cys Phe Asp Ala Cys Asn Leu Tyr Leu Glu Ala Lys Asp Ser Phe
35 40 45
Gln Val Thr Trp Phe Glu Glu His Ile Arg His Lys Val Lys Ala Ser
50 55 60
Leu Ile Asn Asn Asn Gly Lys Pro Ile Arg Val Arg Val Thr Ser Leu
65 70 75 80
Asp Lys Ser Thr Pro Phe Lys Asp Thr Gln Ile Gln Gln Glu Lys Thr
85 90 95
Ala Tyr Phe Thr Met Lys Tyr Gly Asp Ile Asp Pro Asn Met Ser Phe
100 105 110
Ala Asn Phe Leu Val Thr Pro Glu Asn Asp Leu Pro Val Arg Ile Leu
115 120 125
Gln Glu Phe Ala Lys Val Ser Glu Gln Gly Lys Gly Phe Pro Phe Asn
130 135 140
Pro Ile Tyr Leu Phe Gly Pro Glu Ser Ser Gly Lys Thr His Leu Met
145 150 155 160
Gln Ala Ala Val Gly Gly Leu Arg Glu Ala Gly Val Lys Thr Leu Tyr
165 170 175
Val Thr Ser Glu Leu Phe Thr Glu His Leu Val Ser Ala Ile Arg Ser
180 185 190
Gly Glu Met Gln Arg Phe Arg Ala Phe Tyr Arg Asn Val Glu Ala Leu
195 200 205
Phe Ile Glu Asp Ile Glu Val Leu Ser Gly Lys Gly Ala Thr Gln Glu
210 215 220
Glu Phe Phe His Thr Phe Xaa Ser Leu His Thr Glu Gly Lys Leu Ile
225 230 235 240
Val Ile Ser Ser Thr Phe Ala Pro Gly Asp Leu Lys Ala Met Glu Glu
245 250 255
Arg Leu Ile Ser Arg Phe Glu Trp Gly Ile Ser Ile Pro Val Ser Pro
260 265 270
Leu Thr Arg Glu Gly Leu Lys Ser Phe Leu Glu Arg Arg Ile Glu Lys
275 280 285
Leu Asn Ile Arg Ile Glu Glu Thr Ala Leu Asp Phe Leu Ile Gln Ala
290 295 300
Leu Ser Ser His Val Lys Ser Leu Leu His Ala Leu Thr Thr Leu Ala
305 310 315 320
Lys Arg Val Ala Tyr Lys Lys Leu Ser His Gln Met Leu Tyr Gln Gly
325 330 335
Asp Ile Glu Ala Leu Leu His Asp Val Leu Gln Ala Ala Glu Ser Ile
340 345 350
Arg Leu Thr Pro Ser Gly Ile Val Arg Ala Thr Ala Gln Tyr Tyr Gly
355 360 365
Val Ser Pro Glu Ser Val Leu Gly Arg Ser Gln Ser Arg Glu Tyr Val
370 375 380

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Leu Pro Arg Gln Val Ala Met Phe Leu Cys Arg Gln Lys Leu Ser Leu
385 390 395 400
Ser Tyr Val Lys Ile Gly Glu Val Phe Ser Arg Asp His Ser Thr Val
405 410 415
Ile Ser Ser Ile Arg Ala Ile Ser Gln Lys Leu Glu Glu Asp Asp Arg
420 425 430
Glu Cys Asp Val Ser Cys Ala Ile Gln Glu Leu Thr Lys Arg Leu Ser
435 440 445
Ser Ala Tyr Gln Ser Leu Asp Phe Ile Glu Asp
450 455

<210>191
<211>119
<212>PRT
<213>Chlamydia trachomatis
<400>191
Gly Gly Phe Met Gly Ile Lys Pro His Asp Tyr Gly Cys Trp Gly Ser
1 5 10 15
Arg Gly Asn Val Phe Thr Leu Gln Asp Leu Asn Thr Gln Gln Ala Asn
20 25 30
Gln Ser Ala Ala Ala Ser Ser Ser Ser Val Leu Lys Ser Glu Cys Ala
35 40 45
Ala Lys Val Ala Arg Tyr Ala Leu Gly Phe Leu Phe Gly Leu Gly Phe
50 55 60
Ile Leu Ser Ile Val Thr Phe Ile Ala Ala Ala Ala Thr Leu Pro Leu
65 70 75 80
Gly Thr Thr Thr Ile Leu Ile Met Val Thr Gln Ile Ala Phe Ala Ala
85 90 95
Ala Leu Ala Phe Lys Leu Tyr Asp Leu Phe Lys His Asp Val Pro Thr
100 105 110
Cys Ser Ile Thr Ser Lys Ala
115

<210>192
<211>616
<212>PRT
<213>Chlamydia trachomatis
<400>192
Glu Ala Ser Met Tyr Phe Asp Arg Thr Lys Ile Asn Val Glu Ser Met
1 5 10 15
Lys Gln Ala Ile Leu Glu Arg Val Tyr Cys Gly Val Val Gln Thr Pro
20 25 30
Gln Ser Ala Ser Thr Arg Asp Ile Phe Ile Ala Val Ala Lys Thr Val
35 40 45
Leu Glu Trp Met Ala Lys Gly Trp Leu Lys Thr Gln Ser Ser Tyr Tyr
50 55 60
Asp Asn Asp Val Lys Arg Val Tyr Tyr Ile Ser Met Glu Phe Leu Leu
65 70 75 80
Gly Arg Ser Leu Lys Ser Asn Leu Leu Asn Leu Gly Leu Leu Asp Leu
85 90 95
Val Lys Glu Ala Leu Phe Asp Leu Gly Tyr Asp Phe Asp Gln Leu Val
100 105 110
Glu Met Glu His Asp Ala Gly Leu Gly Asn Gly Gly Leu Gly Arg Leu
115 120 125
Ala Ala Cys Phe Leu Asp Ser Met Ala Thr Leu Glu Ile Pro Ala Tyr
130 135 140
Gly Tyr Gly Leu Arg Tyr Asp Tyr Gly Ile Phe Asp Gln Lys Ile Glu
145 150 155 160
Asn Gly Phe Gln Val Glu Ser Pro Ile Glu Trp Leu Arg Tyr Gly Asn
165 170 175
Pro Trp Glu Ile Cys Arg Gly Glu Tyr Leu Tyr Pro Val His Phe Tyr
180 185 190
Gly Lys Val Lys His Ser Ile Asp Ser Arg Gly Arg Asp Val Ala Glu

Substitute Sheet (Rule 26)

```
        195                 200                 205
Leu Val Asp Ser Gln Glu Val Leu Ala Met Ala Tyr Asp Val Pro Val
    210                 215                 220
Pro Gly Phe Asn Asn Asp Thr Val Asn Ser Leu Arg Leu Trp Gln Ala
225                 230                 235                 240
Gln Ser Arg His Gly Phe Glu Phe Ser Tyr Phe Asn His Gly Asn Tyr
                245                 250                 255
Ile Arg Ala Ile Glu Asp Ile Ala Leu Ala Gly Asn Ile Thr Arg Val
            260                 265                 270
Leu Tyr Pro Asn Asp Ser Ile Ser Glu Gly Gln Glu Leu Arg Leu Lys
        275                 280                 285
Gln Glu Tyr Phe Leu Val Ser Ala Thr Ile Gln Asp Ile Leu Arg Arg
    290                 295                 300
Tyr Thr Lys Thr His Leu Ser Leu Asp Lys Leu Ser Glu Lys Val Ser
305                 310                 315                 320
Val Gln Leu Asn Asp Thr His Pro Ala Leu Gly Ile Ala Glu Met Met
                325                 330                 335
Arg Leu Leu Val Asp Arg Glu Glu Leu Asp Trp Asp Val Ala Trp Asp
            340                 345                 350
Ala Thr Thr Lys Ile Phe Asn Tyr Thr Asn His Thr Ile Leu Pro Glu
        355                 360                 365
Ala Leu Glu Arg Trp Ser Leu Asp Leu Phe Ser Lys Val Leu Pro Arg
    370                 375                 380
His Leu Glu Ile Ile Tyr Glu Ile Asn Ala Arg Trp Leu Ala Lys Val
385                 390                 395                 400
Ser Gln Lys Tyr Pro Gly Asp Asn Asp Lys Arg Arg Ala Leu Ser Ile
                405                 410                 415
Ile Glu Glu Gly Ser Ser Lys Phe Val Asn Met Ala Asn Leu Ala Val
            420                 425                 430
Val Gly Thr Asn Lys Val Asn Gly Val Ser Thr Phe His Ser Gln Leu
        435                 440                 445
Ile Lys Ser Thr Leu Phe Lys Asp Phe Val Glu Phe Phe Pro Asp Lys
    450                 455                 460
Phe Ile Asn Val Thr Asn Gly Ile Thr Pro Arg Arg Trp Leu Ala Leu
465                 470                 475                 480
Ser Asn Lys Lys Leu Ser Ser Leu Leu Asn Arg Thr Ile Gly Thr Glu
                485                 490                 495
Tyr Leu Thr Asn Leu Thr His Leu His Lys Val Ile Pro Leu Ala Glu
            500                 505                 510
Asp Ser Gly Phe Arg Glu Glu Trp Arg Asn Ile Lys Ile Gln Asn Lys
        515                 520                 525
Glu Glu Leu Ala Ala Arg Ile Tyr Lys Glu Leu Gly Val Thr Val Asn
    530                 535                 540
Pro Gln Ser Ile Phe Asp Cys His Ile Lys Arg Ile His Glu Tyr Lys
545                 550                 555                 560
Arg Gln Leu Thr Asn Ile Leu Arg Val Ile Tyr Phe Tyr Asn Glu Ile
                565                 570                 575
Arg Asn Gly Ser Gly Glu Ile Val Pro Thr Thr Val Ile Phe Gly Gly
            580                 585                 590
Lys Ala Ala Pro Gly Tyr Ala Met Ala Lys Leu Ile Ile Lys Leu Ile
        595                 600                 605
Asn Asn Val Ala Ala Val Val Lys
    610                 615
<210>193
<211>206
<212>PRT
<213>Chlamydia trachomatis
<400>193
Gln Leu Leu Leu Asn Asn Asp Pro Lys Val Asn Asp Gln Leu Lys Val
  1               5                  10                  15
Ile Phe Trp Pro Asn Tyr Arg Val Ser Leu Ala Glu Ala Ile Ile Pro
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```
            20                  25                  30
Ala Thr Asp Leu Ser Glu Gln Ile Ser Thr Ala Gly Met Glu Ala Ser
        35                  40                  45
Gly Thr Gly Asn Met Lys Phe Ala Leu Asn Gly Ala Leu Thr Ile Gly
    50                  55                  60
Thr Met Asp Gly Ala Asn Ile Glu Met Ala Glu His Ile Gly Lys Glu
65                  70                  75                  80
His Met Phe Ile Phe Gly Leu Leu Glu Glu Glu Ile Ser Glu Leu Arg
                85                  90                  95
Lys Glu Tyr Tyr Pro Gln Gly Ile Cys Asn Ala Asn Pro Thr Ile Gln
            100                 105                 110
Glu Ile Leu Asp Met Ile Ala Gln Ala Lys Phe Ser Gln Glu Asp Lys
        115                 120                 125
Asp Leu Phe Lys Pro Ile Val Asn Arg Leu Leu Asn Glu Gly Asp Pro
    130                 135                 140
Phe Phe Val Leu Ala Asp Leu Glu Ala Tyr Ile Asn Thr Gln Asn Arg
145                 150                 155                 160
Val Ala Ser Leu Phe Lys Gln Pro Glu Glu Trp Thr Lys Lys Ser Ile
                165                 170                 175
Tyr Asn Val Gly Gly Ile Gly Phe Phe Ser Ser Asp Arg Ser Ile Ala
            180                 185                 190
Glu Tyr Ala Ser Asn Ile Trp Xaa Val Ser Arg Pro Thr Ser
        195                 200                 205
<210>194
<211>149
<212>PRT
<213>Chlamydia trachomatis
<400>194
Asp Asn Val Asn Ile Gln Val Glu Pro Thr Ala Ser Ser Pro Phe Lys
  1               5                  10                  15
Thr Thr Gly Cys Ser Ser Thr Leu Pro Thr Ala Arg Ile Ala Ala Cys
            20                  25                  30
Gly Gly Phe Lys Ile Ala Val Lys Ser Glu Ile Pro Val Ile Pro Arg
        35                  40                  45
Leu Asp Thr Gln Lys Glu Pro Pro Leu Tyr Ser Ser Ser Ala Arg Asp
    50                  55                  60
Cys Cys Leu Ala Leu Val Ala Ser Pro Leu Ile Ser Ala Glu Ile Ile
65                  70                  75                  80
Pro Ile Phe Phe Leu Ser Ala Gln Arg Thr Ile Gly Val Ile Thr Pro
                85                  90                  95
Ser Gly Ile Ala Thr Ala Ile Glu Ile Ser Ile Val Glu Asn Arg Ile
            100                 105                 110
Ile Leu Leu Ser Thr Leu Leu Asn Pro Glu Leu Ile Ser Gly Asn Ser
        115                 120                 125
Phe Arg Ala Lys Ala Gln Ala Arg Thr Ile Gln Ser Leu Ile Glu Ser
    130                 135                 140
Leu Ile Phe Cys Ser
145
<210>195
<211>432
<212>PRT
<213>Chlamydia trachomatis
<400>195
Gly Asn Val Val Val Ser Leu Leu Lys Met Pro Lys Leu Ser Pro Thr
  1               5                  10                  15
Met Glu Ile Gly Ile Leu Val Lys Trp His Lys Lys Ala Gly Asp Glu
            20                  25                  30
Ile His Phe Gly Asp Val Leu Leu Glu Ile Ser Thr Asp Lys Ala Val
        35                  40                  45
Leu Glu His Thr Ala Ser Glu Asp Gly Trp Leu Leu Glu Ile Leu Val
    50                  55                  60
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Lys Glu Gly Thr Lys Thr Pro Ile Gly Thr Pro Ile Ala Val Phe Ser
65 70 75 80
Thr Glu Gln Asn Ala Gln Tyr Asp Leu Lys Gln Leu Leu Pro Leu Glu
85 90 95
Glu Thr Val Val Thr Asp Ala Ala Thr Glu Ala Ser Pro Lys Asp Ser
100 105 110
Ala Gln Thr Asp Ser Gln Tyr Thr Ser Gly Pro Ser Ile Thr Met Met
115 120 125
Gly Phe Arg Pro Glu Pro Pro Leu Ala Thr Pro Leu Thr Ile Lys His
130 135 140
Ser Asn Asp Pro Val Leu Ala Ser Pro Leu Ala Lys Lys Leu Ala Lys
145 150 155 160
Glu Gln Asn Leu Asp Leu Ser Gly Val Thr Gly Ser Gly Pro Gly Gly
165 170 175
Arg Ile Ile Lys Lys Asp Leu Glu Lys Ala Pro Pro Leu Arg Ile Ala
180 185 190
Gly Phe Gly Tyr Pro Glu Ala Pro Asn Val Asn Pro Gly Ser Tyr Ile
195 200 205
Glu Glu Pro Leu Ser Pro Val Arg Glu Val Ile Ser Lys Arg Leu Gln
210 215 220
Ala Ala Lys Thr Phe Ile Pro His Phe Tyr Val Arg Gln Arg Ile Tyr
225 230 235 240
Ala Ser Pro Leu Leu Ala Leu Leu Lys Glu Leu Gln Glu Gln Asn Ile
245 250 255
Lys Leu Ser Ile Asn Asp Cys Ile Val Arg Ala Cys Ala Leu Ala Leu
260 265 270
Lys Glu Phe Pro Glu Ile Asn Ser Gly Phe Asn Ser Val Asp Asn Lys
275 280 285
Ile Ile Arg Phe Ser Thr Ile Asp Ile Ser Ile Ala Val Ala Ile Pro
290 295 300
Asp Gly Val Ile Thr Pro Ile Val Arg Cys Ala Asp Arg Lys Asn Ile
305 310 315 320
Gly Met Ile Ser Ala Glu Ile Lys Gly Leu Ala Thr Lys Ala Lys Gln
325 330 335
Gln Ser Leu Ala Glu Glu Glu Tyr Lys Gly Gly Ser Phe Cys Val Ser
340 345 350
Asn Leu Gly Met Thr Gly Ile Ser Asp Phe Thr Ala Ile Leu Asn Pro
355 360 365
Pro Gln Ala Ala Ile Leu Ala Val Gly Ser Val Glu Glu Gln Pro Val
370 375 380
Val Leu Asn Gly Glu Leu Ala Val Gly Ser Thr Cys Met Leu Thr Leu
385 390 395 400
Ser Val Asp His Arg Val Ile Asp Gly Tyr Pro Ala Ala Met Phe Met
405 410 415
Lys Arg Leu Gln Arg Leu Leu Glu Ala Pro Ser Val Leu Leu Leu Asn
420 425 430

<210>196
<211>332
<212>PRT
<213>Chlamydia trachomatis
<400>196
Lys Arg Gly Ser Met Pro Asn Phe Val Thr Leu Glu Ile Arg Glu Ala
1 5 10 15
Ile Arg Gln Ala Ile Asp Glu Glu Met Thr Arg Asp Pro Asn Val Cys
20 25 30
Ile Leu Gly Glu Glu Val Ala Glu Tyr Asn Gly Ala Tyr Lys Val Thr
35 40 45
Lys Asn Leu Leu Asp Lys Trp Gly Pro Thr Arg Val Ile Asp Thr Pro
50 55 60
Ile Ser Glu Ala Ala Phe Ser Gly Ile Gly Ile Gly Ala Ala Leu Thr
65 70 75 80

Gly Leu Arg Pro Ile Ile Glu Phe Met Ser Trp Asn Phe Ser Leu Val
85 90 95
Ala Ala Asp Gln Ile Ile Ser His Ala Ala Lys Met Tyr Tyr Met Thr
100 105 110
Gly Gly Lys Phe Ala Val Pro Ile Val Phe Arg Gly Ala Asn Gly Ala
115 120 125
Ala Ala Gln Val Ser Cys Gln His Ser His Cys Val Glu Ala Leu Tyr
130 135 140
Ala Asn Ile Pro Gly Leu Ile Val Ile Ala Pro Ser Thr Pro Ala Asp
145 150 155 160
Ala Lys Gly Leu Leu Lys Ser Ala Ile Arg Asp Asn Asn Pro Val Leu
165 170 175
Phe Leu Glu Asn Glu Leu Asp Tyr Asn Leu Lys Gly Glu Val Pro Ser
180 185 190
Glu Glu Tyr Leu Ile Pro Ile Gly Lys Ala Arg Ile Val Gln Glu Gly
195 200 205
Lys Asp Leu Thr Ile Ile Ser His Ser Arg Met Val Ser Ile Val Glu
210 215 220
Gln Ala Ala Lys Thr Ala Lys Gln Arg Trp Gly Leu Ser Ile Glu Thr
225 230 235 240
Ile Asp Leu Arg Thr Ile Lys Pro Leu Asp Val Ala Thr Leu Leu Thr
245 250 255
Ser Val Lys Lys Thr Gly Asn Cys Leu Val Val Glu Glu Gly His Tyr
260 265 270
Phe Cys Gly Ile Ser Ala Glu Val Ile Thr Thr Ile Thr Glu His Ile
275 280 285
Phe Asp Tyr Leu Asp His Pro Pro Leu Arg Val Cys Gln Lys Glu Thr
290 295 300
Pro Met Pro Tyr Asn Lys Thr Leu Glu Met Ala Thr Leu Pro Asn Ile
305 310 315 320
Asn Arg Ile Leu Asp Ala Ile Glu Lys Ile Met Arg
325 330

<210>197
<211>129
<212>PRT
<213>Chlamydia trachomatis
<400>197
Gln Asn Pro Lys Arg Phe Leu Met Val Phe Leu Ser Ile Thr Leu Asn
1 5 10 15
Gly Phe Asp Leu Phe Asn Ser Leu Ile Gly Phe Arg Glu Ala Tyr His
20 25 30
His Met Gln Gln Thr Gly Ser Pro Ile Ile Val Glu Ala Leu Cys Ser
35 40 45
Arg Phe Arg Gly His Ser Ile Ser Asp Pro Asn Leu Tyr Arg Ser Lys
50 55 60
Glu Glu Met Gln Cys Leu Leu Lys Arg Asp Pro Ile Leu Phe Ala Lys
65 70 75 80
Glu Trp Leu Ile Arg Ala Asn Val Leu Ser Glu Asp Asp Phe Lys Asp
85 90 95
Leu Arg Gln Thr Ser Lys Thr Ala Val Leu Glu Ala Val Ala Gln Ala
100 105 110
Arg Leu Asp Pro Glu Pro Ala Val Ala Thr Leu Glu Glu Gly Val Tyr
115 120 125
Ala

<210>198
<211>140
<212>PRT
<213>Chlamydia trachomatis
<400>198
Leu Cys Cys Trp Asn Ile Pro Leu Arg Gln Leu Ala Ala Glu Leu Leu

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  1               5                  10                  15
Gly Lys Glu Thr Gly Cys Ala Leu Gly Arg Gly Gly Ser Met His Met
            20                  25                  30
Cys Gly Asp Arg Leu Pro Gly Gly Phe Gly Ile Val Gly Gly Gln Ile
        35                  40                  45
Pro Leu Ala Ala Gly Ala Ala Phe Ser Met Lys Tyr Gln Asn Ser Ser
    50                  55                  60
Ser Ile Ser Met Cys Phe Ile Gly Asp Gly Ala Val Ala Gln Gly Val
65                  70                  75                  80
Phe His Glu Thr Leu Asn Phe Val Ala Leu His Ser Leu Pro Leu Met
                85                  90                  95
Leu Ile Ile Glu Asn Asn Gly Trp Ser Met Gly Thr Ala Leu His Arg
            100                 105                 110
Ala Ile Ala Lys Gln Pro Ile Ala Glu Ser Gln Ala Ile Ser Tyr Gly
        115                 120                 125
Leu Ser Phe Asp His Phe Glu Trp Ile Arg Phe Ile
    130                 135                 140
<210>199
<211>126
<212>PRT
<213>Chlamydia trachomatis
<400>199
Met His Pro Leu Thr Leu Asn Ile Ala Ser Glu Glu Thr Thr Glu Ala
  1               5                  10                  15
Xaa Val Phe His Val Ile Glu Asn Phe Gly Asn Ala Phe Cys Ile Asp
            20                  25                  30
Leu Leu Lys Lys Met Leu Leu Ile Arg Glu Phe Glu Ile Arg Gly Glu
        35                  40                  45
Glu Ala Tyr Leu Glu Gly Leu Val Gly Gly Phe Tyr His Ser Tyr Ile
    50                  55                  60
Gly Gln Glu Ala Val Ala Thr Ala Ala Ile Ala Cys Thr Gly Lys Asp
65                  70                  75                  80
His Trp Phe Phe Ser Ser Tyr Arg Cys His Gly Val Ala Leu Leu Leu
                85                  90                  95
Glu Tyr Pro Phe Thr Thr Thr Gly Ser Arg Thr Ser Arg Glu Arg Asn
            100                 105                 110
Arg Val Cys Phe Arg Thr Arg Arg Ile Tyr Ala Tyr Val Trp
        115                 120                 125
<210>200
<211>403
<212>PRT
<213>Chlamydia trachomatis
<400>200
Ser Trp Phe Glu Val Leu Lys Phe His Phe Pro Cys Ser Glu Gly Leu
  1               5                  10                  15
Ile Arg Gly Phe Ser Ile Glu Phe Leu Cys Cys Ile Leu Thr Asp Lys
            20                  25                  30
Lys Ile Gln Tyr Pro Leu Lys Asn Phe Ile Cys Val Glu Phe Ile Val
        35                  40                  45
Asn Ser Phe Phe Gly Ile Leu Pro Arg Gly Ile Pro Asn Val Gly Gly
    50                  55                  60
Leu Ser Glu Val Ala Gly Glu Asn Lys Gln Ser Leu Glu Glu Arg Glu
65                  70                  75                  80
Gln Asp Lys Glu Leu Lys Leu Glu Lys Lys Leu Leu Ala Ile Arg Lys
                85                  90                  95
Arg Ile Lys Cys Phe Cys Pro Gln Gln Pro Glu Ile Ser Val Gln Ala
            100                 105                 110
Ala Pro Leu Lys His Thr Gly Thr Phe Pro Cys Ser Glu Glu Glu Leu
        115                 120                 125
Arg Asp Ile Ser Asp Leu Phe Ser Ser Leu Lys Ser Phe Arg Gln Gln
    130                 135                 140
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Leu Ala Gln Leu Phe Phe Tyr Thr Pro Pro Leu Asn Leu Glu Trp Glu
145                 150                 155                 160
Asp Phe Leu Lys Phe Phe Phe Ala Phe Glu Lys Arg Glu Leu Gly Gly
                165                 170                 175
Ile Leu Phe Ser Ala Gly Pro Phe Glu Ser Phe Asp Arg Tyr Leu Tyr
            180                 185                 190
Gln Val Asn Lys Ala Arg Pro Val Pro Val Leu Ile Ala Thr Thr Val
        195                 200                 205
Ser Tyr Ala Leu Gln Ala Tyr Cys Ser Tyr Ile Asn Arg Ala Pro Phe
    210                 215                 220
Gln Glu Lys Glu Asn Phe Phe Gln Leu Gly Glu Ala Val Gly Ile Phe
225                 230                 235                 240
Leu Lys Glu Arg Lys Val Ser Ile Ala Leu Met Tyr Lys Glu Ile Leu
                245                 250                 255
Asp Leu Asp Asn Lys Gln Tyr Ser Glu Leu Cys Arg Gly Leu Gln Lys
            260                 265                 270
Ser Gln Ile Val Gln Gly Glu Val Phe His Ser Ser Thr Gln Glu Arg
        275                 280                 285
Asp Gly Leu Asn Pro Ile Ser Val Asn Tyr Asp Leu Met Gly Thr Ile
    290                 295                 300
Ala Ala Leu Ser Val Asn Ile Asp Arg Ser Cys Leu Arg Phe Ser Gly
305                 310                 315                 320
Ser His Ile Phe His Asp Asp Glu Met Ala Ile Glu Thr Leu His Lys
                325                 330                 335
Gly Gly Asp Val Phe Thr Phe Ser Ser Leu Ala Glu Phe Gln Phe Ser
            340                 345                 350
Glu Lys Arg Leu Leu His Leu Val Ser Thr Gly Arg Val Cys Pro Glu
        355                 360                 365
Ile Ile Arg Lys Lys Leu Ile Lys Val Leu Leu Leu Lys Lys Arg Ala
    370                 375                 380
Leu Cys Lys Pro Phe Cys Arg His Ile Gln Ile Thr Ser Glu Thr Ala
385                 390                 395                 400
Gln Leu Asn

<210>201
<211>354
<212>PRT
<213>Chlamydia trachomatis
<400>201
Met Ser Gln Ser Thr Tyr Ser Leu Glu Gln Leu Ala Asp Phe Leu Lys
  1               5                  10                  15
Val Glu Phe Gln Gly Asn Gly Ala Thr Leu Leu Ser Gly Val Glu Glu
             20                  25                  30
Ile Glu Glu Ala Lys Thr Ala His Ile Thr Phe Leu Asp Asn Glu Lys
         35                  40                  45
Tyr Ala Lys His Leu Lys Ser Ser Glu Ala Gly Ala Ile Ile Ile Ser
     50                  55                  60
Arg Thr Gln Phe Gln Lys Tyr Arg Asp Leu Asn Lys Asn Phe Leu Ile
 65                  70                  75                  80
Thr Ser Glu Ser Pro Ser Leu Val Phe Gln Lys Cys Leu Glu Leu Phe
                 85                  90                  95
Ile Thr Pro Val Asp Ser Gly Phe Pro Gly Ile His Pro Thr Ala Val
            100                 105                 110
Ile His Pro Thr Ala Ile Ile Glu Asp His Val Cys Ile Glu Pro Tyr
        115                 120                 125
Ala Val Val Cys Gln His Ala His Val Gly Ser Ala Cys His Ile Gly
    130                 135                 140
Ser Gly Ser Val Ile Gly Ala Tyr Ser Thr Val Gly Gln His Ser Tyr
145                 150                 155                 160
Ile His Pro Arg Val Val Ile Arg Glu Arg Val Ser Ile Gly Lys Arg
                165                 170                 175
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Val Ile Ile Gln Pro Gly Ala Val Ile Gly Ser Cys Gly Phe Gly Tyr
            180                 185                 190
Val Thr Ser Ala Phe Gly Gln His Lys His Leu Lys His Leu Gly Lys
        195                 200                 205
Val Ile Ile Glu Asp Asp Val Glu Ile Gly Ala Asn Thr Thr Ile Asp
    210                 215                 220
Arg Gly Arg Phe Lys His Ser Val Val Arg Glu Gly Ser Lys Ile Asp
225                 230                 235                 240
Asn Leu Val Gln Ile Ala His Gln Val Glu Val Gly Gln His Ser Met
                245                 250                 255
Ile Val Ala Gln Ala Gly Ile Ala Gly Ser Thr Lys Ile Gly Asn His
            260                 265                 270
Val Ile Ile Gly Gly Gln Ala Gly Ile Thr Gly His Ile Cys Ile Ala
        275                 280                 285
Asp His Val Ile Met Met Ala Gln Thr Gly Val Thr Lys Ser Ile Thr
    290                 295                 300
Ser Pro Gly Ile Tyr Gly Gly Ala Pro Ala Arg Pro Tyr Gln Glu Ile
305                 310                 315                 320
His Arg Gln Val Ala Lys Val Arg Asn Leu Pro Arg Leu Glu Glu Arg
                325                 330                 335
Ile Ala Ala Leu Glu Lys Leu Val Gln Lys Leu Glu Ala Leu Ser Glu
            340                 345                 350
Gln His

<210>202
<211>176
<212>PRT
<213>Chlamydia trachomatis
<400>202
Glu Arg Ile Met Lys Lys Phe Leu Leu Leu Ser Leu Met Ser Leu Ser
  1               5                  10                  15
Ser Leu Pro Thr Phe Ala Ala Asn Ser Thr Gly Thr Ile Gly Ile Val
             20                  25                  30
Asn Leu Arg Arg Cys Leu Glu Glu Ser Ala Leu Gly Lys Lys Glu Ser
         35                  40                  45
Ala Glu Phe Glu Lys Met Lys Asn Gln Phe Ser Asn Ser Met Gly Lys
     50                  55                  60
Met Glu Glu Glu Leu Ser Ser Ile Tyr Ser Lys Leu Gln Asp Asp Asp
 65                  70                  75                  80
Tyr Met Glu Gly Leu Ser Glu Thr Ala Ala Ala Glu Leu Arg Lys Lys
                85                  90                  95
Phe Glu Asp Leu Ser Ala Glu Tyr Asn Thr Ala Gln Gly Gln Tyr Tyr
            100                 105                 110
Gln Ile Leu Asn Gln Ser Asn Leu Lys Arg Met Gln Lys Ile Met Glu
        115                 120                 125
Glu Val Lys Lys Ala Ser Glu Thr Val Arg Ile Gln Glu Gly Leu Ser
    130                 135                 140
Val Leu Leu Asn Glu Asp Ile Val Leu Ser Ile Asp Ser Ser Ala Asp
145                 150                 155                 160
Lys Thr Asp Ala Val Ile Lys Val Leu Asp Asp Ser Phe Gln Asn Asn
                165                 170                 175

<210>203
<211>797
<212>PRT
<213>Chlamydia trachomatis
<400>203
Ile Lys Glu Val Ile Met Leu Gly Ile Arg Lys Lys Thr Ile Leu Gln
  1               5                  10                  15
Leu Ala Val Leu Leu Leu Leu Thr Phe Ser Gln Ser Ser Phe Cys Ser
             20                  25                  30
Thr Ser Glu Gly Arg Met Val Val Glu Ser Ile Thr Ile Thr Thr Gln
```

Sequence Listing

```
          35                  40                  45
Gly Glu Asn Thr Gln Asn Lys Arg Ala Ile Pro Lys Ile Lys Thr Lys
     50                  55                  60
Gln Gly Thr Leu Phe Ser Gln Ala Asp Phe Asp Glu Asp Leu Arg Thr
 65                  70                  75                  80
Leu Ser Lys Asn Phe Asp Arg Val Glu Pro Ile Val Glu Phe Arg Asn
                 85                  90                  95
Gly Gln Ala Val Ile Ser Leu Ile Leu Thr Ala Lys Ser Val Ile Arg
            100                 105                 110
Glu Ile Asn Ile Ser Gly Asn Glu Ala Ile Pro Thr His Lys Ile Leu
        115                 120                 125
Lys Thr Leu Glu Leu Tyr Lys Asn Asp Leu Phe Asp Arg Glu Leu Phe
    130                 135                 140
Phe Lys Asn Phe Asp Ala Leu Arg Thr Leu Tyr Leu Lys Arg Gly Tyr
145                 150                 155                 160
Tyr Asp Ser Gln Leu Ser Tyr Ser His Asn His Asn Glu Lys Glu Gly
                165                 170                 175
Phe Ile Asp Ile Ser Ile Glu Ile Lys Glu Gly Arg His Gly Arg Ile
            180                 185                 190
Lys Lys Leu Thr Ile Ser Gly Ile Thr Arg Thr Glu Ala Ser Asp Leu
        195                 200                 205
Gly Asp Ile Val Leu Thr Lys Gln Tyr Ser Thr Thr Thr Ser Trp Phe
    210                 215                 220
Thr Gly Ala Gly Val Tyr His Pro Asp Met Val Glu Gln Asp Leu Phe
225                 230                 235                 240
Ala Ile Thr Asn Tyr Phe Gln Asn Lys Gly Tyr Ala Asp Ala Lys Val
                245                 250                 255
Ser Lys Glu Val Ser Thr Asp Ala Lys Gly Asn Ile Thr Leu Leu Ile
            260                 265                 270
Val Val Asp Lys Gly Pro Leu Tyr Thr Leu Gly His Val His Ile Glu
        275                 280                 285
Gly Phe Thr Ala Leu Ser Lys Arg Leu Leu Asp Lys Gln Leu Leu Val
    290                 295                 300
Gly Pro Asn Ser Leu Tyr Cys Pro Asp Lys Ile Trp Thr Gly Ala Gln
305                 310                 315                 320
Lys Ile Arg Ser Ala Tyr Ala Arg Tyr Gly Tyr Val Asn Thr Asn Val
                325                 330                 335
Asp Val Ser Phe Ser Ala His Pro Thr Leu Pro Val Tyr Asp Val Thr
            340                 345                 350
Tyr Arg Val Ser Glu Gly Ser Pro Tyr Lys Ile Gly Leu Ile Lys Ile
        355                 360                 365
Lys Gly Asn Thr His Thr Lys His Asp Val Ile Leu His Glu Thr Ser
    370                 375                 380
Leu Phe Pro Gly Asp Thr Phe Tyr Arg Leu Lys Leu Glu Asp Thr Glu
385                 390                 395                 400
Thr Arg Leu Arg Asn Thr Gly Tyr Phe Lys Ser Val Ser Val Tyr Thr
                405                 410                 415
Val Arg Ser Gln Leu Asp Pro Leu Asp Ser Asn Asp Leu Tyr Arg Asp
            420                 425                 430
Val Phe Ile Glu Val Lys Glu Thr Glu Thr Gly Asn Leu Gly Leu Phe
        435                 440                 445
Leu Gly Phe Ser Ser Ile Asp His Leu Phe Gly Gly Ala Glu Ile Ala
    450                 455                 460
Glu Ser Asn Phe Asp Leu Phe Gly Ala Arg Asn Phe Leu Lys Lys Gly
465                 470                 475                 480
Phe Lys Ser Leu Arg Gly Gly Gly Glu Tyr Leu Phe Leu Lys Ala Asn
                485                 490                 495
Leu Gly Asp Lys Val Thr Asp Tyr Thr Val Lys Trp Thr Lys Pro His
            500                 505                 510
Phe Leu Asn Thr Pro Trp Ile Leu Gly Val Glu Leu Asp Lys Ser Ile
        515                 520                 525
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Asn Lys Ala Leu Ser Lys Asp Tyr Ser Val Asp Thr Tyr Gly Gly Asn
530 535 540
Ile Ser Thr Thr Tyr Ile Leu Asn Asp Lys Leu Lys Tyr Gly Met Tyr
545 550 555 560
Tyr Arg Gly Ser Gln Thr Ser Leu Ser Leu Arg Lys Lys Thr Ser Ser
565 570 575
Ser Asn Arg Leu Gly Pro Asp Leu Asp Ser Asn Lys Gly Phe Val Ser
580 585 590
Ala Ala Gly Leu Asn Val Leu Tyr Asp Ser Ile Asp Asn Pro Arg Lys
595 600 605
Pro Thr Met Gly Ile Arg Ser Phe Leu Asn Xaa Glu Leu Ser Gly Leu
610 615 620
Gly Gly Thr Tyr Gln Phe Thr Lys Leu Thr Ala Ser Gly Ser Ile Tyr
625 630 635 640
Arg Leu Leu Thr Lys Lys Gly Val Leu Lys Xaa Arg Ala Glu Ala Xaa
645 650 655
Phe Ile Lys Pro Phe Gly Thr Thr Thr Ala Gln Gly Ile Pro Val Ser
660 665 670
Glu Arg Phe Phe Leu Gly Gly Glu Thr Thr Val Arg Gly Tyr Lys Pro
675 680 685
Phe Ile Ile Gly Pro Lys Phe Ser Pro Thr Glu Pro Gln Gly Gly Leu
690 695 700
Ser Ser Leu Leu Leu Thr Glu Glu Phe Gln Tyr Pro Leu Ile Ser Gln
705 710 715 720
Pro Cys Ile Asn Ala Phe Val Phe Leu Asp Ser Gly Phe Ile Gly Ile
725 730 735
Glu Glu His Thr Ile Arg Leu Lys Asp Leu Cys Ser Ser Ala Gly Phe
740 745 750
Gly Leu Arg Phe Asp Met Met Asn Asn Val Pro Ile Met Leu Gly Trp
755 760 765
Gly Trp Pro Phe Arg Pro Thr Glu Ile Leu Asn Asn Glu Lys Ile Asp
770 775 780
Val Ser Gln Arg Phe Phe Phe Ala Leu Gly Gly Val Phe
785 790 795
<210>204
<211>205
<212>PRT
<213>Chlamydia trachomatis
<400>204
Ile Gly Leu Lys Asp Met Leu Lys Tyr Pro Asp Tyr Ile Ser Lys Leu
1 5 10 15
Ile Ser Phe Leu Lys Lys Leu Pro Gly Ile Gly Phe Lys Ser Ala Glu
20 25 30
Lys Ile Ala Phe Glu Leu Leu Glu Trp Asp Pro Ser Gln Ile Glu Ala
35 40 45
Met Ala Leu Ala Leu Gln Glu Phe Ser Thr Ser His Ala Thr Cys Ser
50 55 60
Asn Cys Phe Cys Leu Lys Ile Ser Gln Thr Ser Pro Cys Asn Phe Cys
65 70 75 80
Ser Glu Ser Arg Asp Ser Ser Ser Leu Cys Ile Val Ala Thr Pro Lys
85 90 95
Asp Val Phe Ala Leu Glu Lys Ser Lys Ile Phe Lys Gly His Tyr Phe
100 105 110
Val Leu Gly Asn Leu Leu Ser Pro Ile Thr Gly Lys His Leu Ser Leu
115 120 125
Glu Lys Leu Ala Ile Leu Lys Gln Arg Ile Glu Ala Cys Ser Pro Lys
130 135 140
Glu Met Ile Ile Ala Leu Asp Ala Thr Leu Glu Gly Asp Ala Thr Ala
145 150 155 160
Leu Phe Leu Lys Gln Glu Phe Ser Tyr Leu Pro Ile Lys Ile Ser Arg
165 170 175

Sequence Listing

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Leu Ala Leu Gly Met Pro Val Gly Leu Ser Phe Asp Phe Val Asp Ala
            180                 185                 190
Asn Thr Leu Ala Arg Ala Phe Ser Gly Arg Asn Cys Phe
        195                 200                 205
<210>205
<211>341
<212>PRT
<213>Chlamydia trachomatis
<400>205
Leu Val Phe Ser Phe Cys Leu Arg Val Arg Val Lys Lys Asp Val Arg
  1               5                  10                  15
Ala Ser Ile Trp Gly Thr Gly Ser Tyr Leu Pro Lys Lys Ile Leu Thr
             20                  25                  30
Asn Ala Asp Leu Glu Lys Ile Val Glu Thr Ser Asp Glu Trp Ile Ser
         35                  40                  45
Thr Arg Thr Gly Ile Lys Glu Arg Arg Ile Ala Ser Ala Glu Glu Phe
     50                  55                  60
Ser Ser Phe Met Gly Ala Lys Ala Ala Glu Lys Ala Ile Glu Ala Ala
 65                  70                  75                  80
Lys Ile Ser Lys Ser Gln Val Asp Cys Ile Val Phe Ser Thr Ala Ala
                 85                  90                  95
Pro Asp Tyr Ile Phe Pro Ser Ser Ala Ala Leu Ala Gln Ala Tyr Leu
            100                 105                 110
Gly Ile Lys Glu Ile Pro Ala Phe Asp Cys Leu Ala Ala Cys Thr Gly
        115                 120                 125
Phe Leu Tyr Gly Leu Ser Ile Ala Lys Ala Tyr Val Glu Ser Gly Met
    130                 135                 140
Tyr Gln Cys Val Leu Val Ile Ala Ala Asp Lys Leu Ser Ser Phe Val
145                 150                 155                 160
Asn Tyr Gln Asp Arg Asn Thr Cys Val Leu Phe Gly Asp Gly Gly Ser
                165                 170                 175
Ala Cys Ile Val Gly His Ser Arg Pro Gly Ala Leu Glu Ile Ser Lys
            180                 185                 190
Val Asn Leu Gly Ala Asp Gly Lys Gln Gly Asp Leu Leu Arg Leu Pro
        195                 200                 205
Ala Gly Gly Ser Arg Cys Pro Ala Ser Gln Asp Thr Val Gln Asn His
    210                 215                 220
Gln His Phe Ile Thr Met Glu Gly Lys Glu Val Phe Lys His Ala Val
225                 230                 235                 240
Arg Arg Met Glu Phe Ala Ala Lys Thr Cys Ile Thr Glu Ala Gly Leu
                245                 250                 255
Gln Glu Lys Asp Ile Asp Trp Leu Val Pro His Gln Ala Asn Glu Arg
            260                 265                 270
Ile Ile Asp Ala Ile Ala Lys Arg Phe Ala Val Lys Asp Ser Arg Val
        275                 280                 285
Phe Lys Thr Leu Ala Lys Tyr Gly Asn Thr Ala Ala Ser Ser Val Gly
    290                 295                 300
Ile Ala Leu Asp Glu Leu Leu Arg Thr His Asp Ile His Val Ala Glu
305                 310                 315                 320
Arg Leu Leu Leu Val Ala Phe Gly Gly Gly Leu Ser Trp Gly Ala Val
                325                 330                 335
Ile Leu Gln Gln Val
            340
<210>206
<211>309
<212>PRT
<213>Chlamydia trachomatis
<400>206
Val Met Asp Arg Val Gly Leu Leu Phe Pro Gly Gln Gly Ser Gln Phe
  1               5                  10                  15
Val Gly Met Gly Arg Asp Leu Tyr Gln Gln Ser Ser Glu Val Ala Arg
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            20                  25                  30
Leu Phe Ser Gln Ala Asp Glu Phe Leu Gly Phe Ser Leu Ser Ser Ile
        35                  40                  45
Met Phe Glu Gly Pro Glu Glu Val Leu Leu Lys Thr Ser Asn Ser Gln
    50                  55                  60
Leu Ala Ile Tyr Leu His Ser Leu Ala Val Leu Glu Val Leu Ser Thr
65                  70                  75                  80
His Cys Pro Phe Glu Pro Ile Leu Val Ser Gly Leu Ser Leu Gly Glu
                85                  90                  95
Tyr Thr Ala Leu Thr Ala Ser Lys Arg Ile Ser Leu Glu Asp Gly Leu
            100                 105                 110
Arg Ile Val Gln Lys Arg Ala Glu Leu Met Asn Ala Ala Cys Glu Glu
        115                 120                 125
Ser Ser Gly Ala Met Ala Ala Val Leu Gly Leu Thr Ala Asp Val Val
    130                 135                 140
Leu Pro Ala Leu Glu Ser Leu Gly Glu Gly Ile Trp Val Ala Asn Tyr
145                 150                 155                 160
Asn Ala Pro Lys Gln Ile Val Ile Ala Gly Ile Arg Asn Lys Val Glu
                165                 170                 175
Glu Ala Ser Val Ile Leu Arg Glu Leu Gly Ala Lys Lys Val Val Met
            180                 185                 190
Leu Lys Val Ala Gly Ala Phe His Thr Pro Leu Met Gln Thr Ala Gln
        195                 200                 205
Asp Glu Leu Ala Pro Tyr Leu Tyr Gln Leu Ala Ile Lys Asp Ser Asn
    210                 215                 220
Val Ala Phe Ala Ser Asn Val Ile Gly Glu Leu Val Tyr Glu Ser Glu
225                 230                 235                 240
Ala Ile Arg Ser Leu Xaa Val Arg Gln Met Thr Ser Pro Thr Leu Trp
                245                 250                 255
Tyr Gln Thr Cys Phe Gln Ile Asp Pro Lys Val Asp Leu Phe Leu Glu
            260                 265                 270
Leu Gly Pro Gly Asn Val Leu Thr Gly Leu Ser Arg Ser Ile Gly Leu
        275                 280                 285
Ser Ser Pro Cys Lys His Leu Gly Ser Met Glu Asp Ile Glu Asn Phe
    290                 295                 300
Cys Arg Xaa Cys Glu
305
<210>207
<211>248
<212>PRT
<213>Chlamydia trachomatis
<400>207
Met Xaa Gly Leu Leu Val Asn Lys Thr Ala Ile Val Thr Gly Gly Ser
  1               5                  10                  15
Arg Gly Ile Gly Phe Ser Ile Ala Lys Leu Phe Ala Glu Gln Gly Ala
            20                  25                  30
Asn Val Gln Ile Trp Gly Ile Asn Gly Glu Ala Gly Gln Ala Ala Ala
        35                  40                  45
Gln Thr Leu Ser Glu Gln Thr Gly Arg Gln Val Ser Phe Ala Leu Val
    50                  55                  60
Asp Val Ser Lys Asn Asp Met Val Ser Ala Gln Val Gln Asn Phe Leu
65                  70                  75                  80
Ser Glu Tyr Asn Thr Ile Asp Val Ile Val Asn Asn Ala Gly Ile Thr
                85                  90                  95
Arg Asp Ala Leu Leu Met Arg Met Ser Glu Glu Glu Trp Ser Ser Val
            100                 105                 110
Ile Asn Thr Asn Leu Gly Ser Ile Tyr Asn Val Cys Ser Ala Val Ile
        115                 120                 125
Arg Pro Met Ile Lys Ala Arg Ser Gly Ala Ile Ile Asn Ile Ser Ser
    130                 135                 140
Ile Val Gly Leu Arg Gly Ser Pro Gly Gln Thr Asn Tyr Ala Ala Ala
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145                 150                 155                 160
Lys Ala Gly Ile Ile Gly Phe Ser Lys Ala Leu Ser Lys Glu Val Gly
                165                 170                 175
Ser Lys Asn Ile Arg Val Asn Cys Ile Ala Pro Gly Phe Ile Asp Thr
            180                 185                 190
Asp Met Thr Lys Ser Leu Asn Asp Asn Leu Lys Asn Glu Trp Leu Lys
        195                 200                 205
Gly Val Pro Leu Gly Arg Val Gly Met Pro Glu Glu Ile Ala Lys Ala
    210                 215                 220
Ala Leu Phe Leu Xaa Ser Asp Gly Ser Ser Tyr Ile Thr Gly Gln Val
225                 230                 235                 240
Leu Ser Val Asp Gly Gly Met Ala
                245
<210>208
<211>77
<212>PRT
<213>Chlamydia trachomatis
<400>208
Met Ser Leu Glu Asp Asp Val Lys Ala Ile Ile Val Asp Gln Leu Gly
  1               5                  10                  15
Val Ser Pro Glu Asp Val Lys Val Asp Ser Ser Phe Ile Glu Asp Leu
            20                  25                  30
Asn Ala Asp Ser Leu Asp Leu Thr Glu Leu Ile Met Thr Leu Glu Glu
        35                  40                  45
Lys Phe Ala Phe Glu Ile Ser Glu Asp Asp Ala Glu Gln Leu Arg Thr
    50                  55                  60
Val Gly Asp Val Ile Lys Tyr Ile Gln Glu His Gln Asn
65                  70                  75
<210>209
<211>150
<212>PRT
<213>Chlamydia trachomatis
<400>209
Leu Val Pro Ser Phe Lys Ser Leu Val Gly Gly Thr Ser Leu Asn Leu
  1               5                  10                  15
Ile Asp Lys Ala Phe Leu Leu Lys Lys Thr Xaa Leu Phe Ala Ser Leu
            20                  25                  30
Asp Met Asp Val Leu Leu Ser Ile Ala Asp Lys Ser Glu Val Met Leu
        35                  40                  45
Phe Lys Ala Gly Ser Glu Ile Phe Ser Glu Gly Gln Pro Ser Phe Ser
    50                  55                  60
Leu Tyr Val Ile Ala Glu Gly Cys Val Arg Ile Phe Ala Lys Glu Pro
65                  70                  75                  80
Thr Ile Asn Val Arg Leu Lys Pro Leu Asp Cys Phe Gly Glu Glu Ser
                85                  90                  95
Phe Phe Asn Asn Lys Val Arg Glu Tyr Ser Ala Glu Ala Ile Thr Leu
            100                 105                 110
Val Lys Thr Leu Ile Leu Asn Lys Gly Gln Phe Leu Ser Ile Ile Glu
        115                 120                 125
Glu Cys Pro Ser Val Ser Leu Val Leu Leu Glu Phe Tyr Ser Lys Gln
    130                 135                 140
Ile Val Phe Arg Asp Gln
145                 150
<210>210
<211>535
<212>PRT
<213>Chlamydia trachomatis
<400>210
Asn Leu Leu Leu Ser Cys Gly Asp Val His Leu Arg Thr Thr Met Phe
  1               5                  10                  15
Ile His Pro Ala Pro Ile Arg Thr Leu Tyr Tyr His Phe Arg Arg Val
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```
                20                  25                  30
Tyr Ser Phe Ser Asn Ile Xaa Arg Thr His Tyr Ser Lys Ala Ile Leu
            35                  40                  45
Arg Asn Leu Ser Leu Glu Ser Ile His Arg Arg Arg Ser Ile Arg Glu
        50                  55                  60
Trp Phe Ala Asp Met Asn Asp Thr Glu Lys Arg Gln Ala Glu Ile Leu
65                  70                  75                  80
Ser Val Thr His Leu Lys Asn Pro Gln Glu Arg Asn Gln Met Phe Ala
                85                  90                  95
Phe Gln His Leu Leu Asn Leu Lys Asn Arg Ala Val Leu Pro Asn Leu
            100                 105                 110
Leu Leu His Met Asn Lys Leu Gly Leu Ser Gly Lys Leu Lys Thr Leu
        115                 120                 125
Asn Met Leu Lys Asn Ser Val Trp Ala Lys Asp Phe Leu Thr Leu Glu
    130                 135                 140
Leu Leu Lys Arg Trp Ser Ser Leu Pro Gln His Pro Thr Ile Ala Ala
145                 150                 155                 160
Ala Leu His Leu Tyr Phe Val Glu His Asp Phe Leu Tyr Val Ser Asp
                165                 170                 175
Ile Ala Asp Asp Leu Tyr Asp Gln Ser Gly Asp Arg Leu Phe Thr Ala
            180                 185                 190
Val Leu Ile Val Arg Lys His Lys Pro Gly Gly Glu Tyr Gln Ala Leu
        195                 200                 205
Ala Glu Lys His Leu Ser Glu Ile Leu Glu Ser Glu Asp Pro Glu Leu
    210                 215                 220
Ile Ile Lys Gly Leu Ser Ile Leu Ala Leu Glu Arg Ser Pro Ser Asn
225                 230                 235                 240
Phe Pro Ile Ile Leu Pro Phe Leu Thr His Pro Asn Glu Gln Val Phe
                245                 250                 255
Leu Gln Ala Cys Leu Ser Leu Glu Thr Cys Ala Asp Lys Gln Tyr Ala
            260                 265                 270
Gln Tyr Gly Arg Thr Val Leu Asn Thr Leu Lys Lys Thr Lys Asp Thr
        275                 280                 285
Gln Ala Ala Gln Ala Leu Leu Asn Thr Leu Ala Ala Leu Leu Asp Ala
    290                 295                 300
Ser Leu Val Tyr Glu Phe Val Leu Ala Ser Val Gln Leu Lys Ser Val
305                 310                 315                 320
Leu Arg Lys Leu Ala Glu Thr Ile Asp Ala Ser Leu Pro Lys Glu Cys
                325                 330                 335
Ile Pro Ile Leu Ile Glu Met Val Ala Asp His Ser Leu His Asn Ser
            340                 345                 350
Cys Arg Ile Met Ala Ala Lys Ala Leu Ser His Ile Asp Ser Arg Gln
        355                 360                 365
Leu Lys Arg Leu Ala Leu Lys Ile Leu Lys Ser Lys Ala Ala Lys Ala
    370                 375                 380
Leu Phe Tyr Asp Tyr His Lys Asn Phe Ile Gln Lys Arg Tyr Pro Arg
385                 390                 395                 400
Tyr Asp Leu His Leu Leu Ile Glu Ser Leu Glu Ala Asn Tyr Gln Ala
                405                 410                 415
Glu Val Asn Phe Met Leu Ala Phe Leu Ala Ile Val Gly Ser Ser Asp
            420                 425                 430
Tyr Ala Asp Val Leu Ile Arg Ser Leu Thr Gly Lys Asn Leu Lys Ala
        435                 440                 445
Arg Ala Gln Ala Leu Glu Ser Leu Glu Lys Asp Cys Glu Asn His Leu
    450                 455                 460
Phe Thr Leu Val Thr Pro Phe Val Tyr Arg Asp Lys His Thr Ser Asp
465                 470                 475                 480
Glu Lys Tyr Tyr Met Lys Lys Gly Val Glu Pro Leu Ala Ile Glu Glu
                485                 490                 495
Leu Leu Asn Arg Leu Glu Gln Thr Pro Phe Leu Phe Ser Lys Leu Ile
            500                 505                 510
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Ala Gln Gln Leu Lys Glu Gly Ala Phe Ser Leu Arg Cys Arg Val Leu
515 520 525
Phe Cys Ser Thr Lys Leu Cys
530 535
<210>211
<211>420
<212>PRT
<213>Chlamydia trachomatis
<400>211
Leu Lys Leu Thr Ile Lys Ser Ile Ser Met Leu Leu Phe Cys Lys Gly
1 5 10 15
Ser Gly Ser Leu Arg Ala Leu Arg Phe Leu Leu Ser Leu Arg Arg Gly
20 25 30
Glu Glu Lys Arg Ala Leu Leu Phe Leu Leu Leu Gly Leu Ile Trp Ser
35 40 45
Val Ala Cys Tyr Gly Ser Leu Ala Leu Gly Glu Ser Xaa Phe Leu Glu
50 55 60
Glu Ile Gly Ala Glu Lys Leu Pro Phe Ala Tyr Leu Gly Ala Ser Phe
65 70 75 80
Phe Leu Cys Phe Ile Ser Cys Leu Ile Leu Tyr Asn Leu Ser Arg Lys
85 90 95
Arg Val Ser Pro Lys Ala Leu Phe Leu Ser Phe Ile Ser Cys Val Leu
100 105 110
Ile Cys Asn Leu Tyr Leu Phe Trp His Leu Ala Ile His Lys Gly Val
115 120 125
Ser Gly Thr Pro Thr Phe Leu Tyr Arg Ile Leu Ile Trp Gly Leu Thr
130 135 140
Ile Leu Cys Tyr Ala Asn Phe Trp Gly Phe Ile Asp Gln Phe Phe Asn
145 150 155 160
Ile Gln Asp Ala Lys Arg His Phe Cys Ile Phe Asn Ala Ile Thr Phe
165 170 175
Cys Gly Asp Phe Leu Gly Ala Arg Ile Val Asn Gln Ile Gln Tyr Leu
180 185 190
Gly Ala Glu Leu Ile Leu Leu Ala Phe Ile Val Val Ile Thr Phe Ile
195 200 205
Phe Pro Leu Val His Tyr Ile Ser Ser Ser Leu Lys Glu Leu Ser Glu
210 215 220
Asp His Asp Leu Phe Leu Asp Thr Gly Tyr Pro Pro Ser Thr Lys Gln
225 230 235 240
Thr Leu Lys Leu Cys Leu Lys Asp Lys Tyr Thr Phe Tyr Leu Val Ser
245 250 255
Phe Tyr Phe Leu Met Gln Leu Leu Val Val Phe Thr Glu Phe Asn Tyr
260 265 270
Leu Lys Ile Phe Asp Ala Gln Phe Gly Asn Ala Glu Thr Cys Glu Leu
275 280 285
Thr Glu Asn Phe Thr Lys Tyr Ser Ser Trp Ile Ser Leu Gly Asn Met
290 295 300
Phe Phe Ala Leu Phe Ala Tyr Ser Arg Val Ile Thr Arg Phe Gly Ile
305 310 315 320
Asn Asn Ile Ile Leu Phe Ala Pro Ile Cys Phe Phe Ser Leu Phe Cys
325 330 335
Cys Trp Ser Ile Lys Thr Ser Val Phe Ile Ala Thr Met Gly Met Ile
340 345 350
Ala Arg Glu Gly Leu Ala Tyr Ala Leu Asp Asp Asn Asn Leu Gln Leu
355 360 365
Leu Ile Tyr Gly Ile Pro Asn Lys Ile Arg Asn Gln Val Arg Ile Ala
370 375 380
Ile Glu Ser Phe Val Glu Leu Arg Gly Cys Ser Ser Ala His Tyr Tyr
385 390 395 400
Val Tyr Ser Ser Arg Thr Asn Thr Tyr Ser Val Leu Ser Phe Pro Pro
405 410 415

Cys Val Phe Phe
420

<210>212
<211>181
<212>PRT
<213>Chlamydia trachomatis
<400>212

Gly Asn Val Met Thr Tyr Ser Met Ser Asp Ile Ala His Lys Phe Asp
1 5 10 15
Ile Ser Asn Pro Thr Ser Pro Ala Pro Ser Arg Lys Arg Gly Ser Phe
20 25 30
Pro Pro Gln Ser Pro Ser Ala Val Gly Ser Leu Glu Gly Ala Asn Phe
35 40 45
Ser Thr Trp Gly Pro Gly Pro Phe Phe Thr Val Pro Val Tyr Pro Gln
50 55 60
Gln Leu Ala Ala Met Gln Asn Asn Leu Phe Thr Leu Gln Thr Glu Val
65 70 75 80
Ser Ala Leu Lys Lys Lys Leu Val Gln Ser Ser Gln Thr Arg Gly Ser
85 90 95
Leu Gly Leu Gly Pro Gln Phe Leu Ala Ala Cys Leu Val Ala Ala Thr
100 105 110
Ile Leu Ala Val Ala Val Ile Val Leu Ala Ser Leu Gly Leu Gly Gly
115 120 125
Val Leu Pro Phe Val Leu Val Cys Leu Ala Gly Ser Thr Asn Ala Ile
130 135 140
Trp Ala Ile Val Ser Ala Ser Ile Thr Thr Leu Ile Cys Cys Val Ser
145 150 155 160
Ile Ala Cys Ile Phe Leu Ala Lys Cys Asp Lys Gly Ser Asp Pro Gln
165 170 175
Thr Leu Tyr Val Ser
180

<210>213
<211>130
<212>PRT
<213>Chlamydia trachomatis
<400>213

Phe Thr Glu Gly Asn Met Val His Ser Val Tyr Asn Ser Leu Ala Pro
1 5 10 15
Glu Gly Phe Ser Gln Val Ser Ile Gln Pro Ser Gln Ile Pro Thr Ser
20 25 30
Lys Lys Val Met Ile Ala Ile Met Thr Leu Phe Ala Leu Thr Ala Ile
35 40 45
Ala Ala Ile Val Leu Ser Ile Val Thr Val Cys Gly Gly Phe Pro Phe
50 55 60
Leu Leu Ala Ala Leu Asn Thr Val Thr Ile Gly Ala Cys Val Ser Leu
65 70 75 80
Pro Ile Phe Thr Cys Ile Ala Thr Thr Leu Leu Leu Leu Cys Leu Arg
85 90 95
Asn Ile Glu Leu Leu Gly Gln Thr Ala Ser Ile Asp Pro Leu His Ser
100 105 110
Ile Gln Pro Asn Lys Thr Ser Arg Asn Arg Val Val Ala Gln Gln Lys
115 120 125
Met Ser
130

<210>214
<211>490
<212>PRT
<213>Chlamydia trachomatis
<400>214

Met Asn Lys Lys Asn Thr Val Phe Ser Ser Arg Leu Gly Phe Ile Leu
1 5 10 15

```
Ser Met Met Gly Val Ala Ile Gly Ala Gly Asn Ile Trp Arg Phe Pro
                20                  25                  30
Arg Met Val Ala Gln Asn Gly Gly Gly Thr Phe Ile Leu Leu Trp Leu
            35                  40                  45
Leu Phe Leu Ile Ile Trp Ser Ile Pro Leu Ile Ile Val Glu Leu Ser
        50                  55                  60
Ile Gly Lys Leu Thr Arg Lys Ala Pro Ile Gly Ala Leu Ile Arg Thr
65                  70                  75                  80
Ala Gly Pro Lys Ser Ala Trp Leu Gly Gly Phe Ile Val Leu Val Ala
                85                  90                  95
Thr Cys Ile Leu Gly Tyr Tyr Ser Asn Ile Val Gly Trp Gly Phe Ser
            100                 105                 110
Tyr Phe Phe Tyr Ser Leu Ser Gly Lys Ile Val Pro Gly Asn His Phe
        115                 120                 125
Pro Gln Leu Trp Ala His His Cys Gln Ser Trp Met Pro Leu Ser Cys
    130                 135                 140
His Cys Leu Ala Leu Phe Leu Ala Tyr Cys Ile Ile Arg Lys Gly Ile
145                 150                 155                 160
Val Asn Gly Ile Glu Thr Cys Asn Lys Ile Leu Ile Pro Phe Phe Phe
                165                 170                 175
Ile Cys Ala Leu Val Leu Leu Ala Arg Ala Val Ser Leu Pro His Ala
            180                 185                 190
Trp Glu Gly Ile Arg Leu Leu Phe Val Phe Asn Lys Ala Ser Leu Cys
        195                 200                 205
Asp Tyr Lys Val Trp Ile Glu Ala Leu Thr Gln Asn Ala Trp Asp Thr
    210                 215                 220
Gly Ala Gly Trp Gly Leu Leu Leu Val Tyr Ala Gly Phe Ala Ser Lys
225                 230                 235                 240
Gln Thr Ser Leu Val Thr Asn Gly Ala Ile Thr Ala Ile Thr Asn Asn
                245                 250                 255
Phe Ile Ser Phe Leu Met Ala Val Ile Val Phe Ser Ala Cys Ala Ser
            260                 265                 270
Leu Asp Ser Thr Glu Met Leu Gly Leu Arg Glu Gly Val Gly Ala Ser
        275                 280                 285
Asn Ile Gly Met Ala Phe Ile Tyr Leu Pro Glu Leu Phe Thr Arg Leu
    290                 295                 300
Pro His Ala His Ile Leu Ser Thr Phe Phe Ser Ala Ile Phe Phe Leu
305                 310                 315                 320
Ala Phe Ser Met Ala Ala Leu Ser Ser Met Ile Ser Met Leu Phe Leu
                325                 330                 335
Leu Ser Gln Thr Leu Thr Glu Phe Gly Ile Lys Lys His Ile Ala Glu
            340                 345                 350
Ser Ser Ala Thr Ile Ala Ala Phe Leu Ile Gly Val Pro Ser Ala Leu
        355                 360                 365
Asn Leu Gln Phe Phe Asp Asn Gln Asp Ile Val Trp Gly Ile Ala Leu
    370                 375                 380
Ile Leu Asn Gly Met Ile Phe Ile Tyr Ser Ala Leu Ser Tyr Gly Ile
385                 390                 395                 400
Lys Arg Leu Arg Gln Asp Val Ile Asn Ser Val Pro Gly Asp Tyr Lys
                405                 410                 415
Leu Lys Thr Tyr Phe Asp Met Leu Val Lys Phe Leu Leu Pro Leu Glu
            420                 425                 430
Gly Val Leu Leu Leu Ala Trp Tyr Phe Tyr Glu Gly Ala Met Leu Pro
        435                 440                 445
Gln Ala Tyr Trp Trp Asn Pro Phe Val Ser Tyr Asn Ile Ser Ser Leu
    450                 455                 460
Leu Met Gln Trp Gly Leu Gly Gly Gly Val Leu Phe Leu Leu Asn Arg
465                 470                 475                 480
Lys Leu Tyr Thr Lys Phe Tyr Leu Asn Asn
                485                 490
```

<210>215

09/754,280

<211>342
<212>PRT
<213>Chlamydia trachomatis
<400>215

```
Lys Ser Met Val Ser Val Val Arg Ser Ser Leu Tyr Tyr Thr Leu Leu
 1               5                  10                  15
Thr Thr Leu Ile Ser Ala Ala Ile Ala Leu Val Leu Phe Ile Phe Ile
            20                  25                  30
Lys Pro Ser Val Pro Leu Ser Gly Phe Asn Ala Ala Thr Glu Thr Asn
        35                  40                  45
Ala Thr Gly Tyr Leu Ser Val Leu Ser Lys Thr Ile Pro Gly Asn Ile
    50                  55                  60
Leu Glu Pro Phe Leu Glu Ser Asn Val Ile Ala Ala Ala Phe Leu Ser
65                  70                  75                  80
Ala Leu Leu Ala Thr Phe Ser Leu Ser Leu Pro Glu Asn Glu Arg Leu
                85                  90                  95
Phe Val Arg Asn Ala Phe Asn Thr Leu Phe Ser Leu Leu Leu Ser Ile
            100                 105                 110
Ser Lys Gly Ile Leu Lys Met Leu Pro Leu Ala Thr Phe Ala Phe Ser
        115                 120                 125
Leu Leu Phe Val Arg Glu Met Arg Thr Gly Asn Leu Glu Leu Ser Ser
    130                 135                 140
Phe Gly Glu Tyr Leu Phe Cys Ile Val Thr Ala Asn Cys Leu Gln Gly
145                 150                 155                 160
Phe Leu Val Leu Pro Leu Leu Leu Lys Met Lys Gly Ile Ser Pro Leu
                165                 170                 175
Arg Thr Phe Lys Leu Met Ser Arg Pro Leu Ala Thr Ala Phe Phe Ser
            180                 185                 190
Lys Ser Ser Ala Val Thr Leu Pro Leu Thr Met Glu Val Ala Glu Glu
        195                 200                 205
Asn Leu His Ile Arg Pro Thr Ile Ser Arg Phe Val Phe Pro Leu Cys
    210                 215                 220
Ser Val Ile Asn Met Asn Ala Cys Ala Ala Phe Ile Leu Thr Thr Val
225                 230                 235                 240
Leu Phe Val Gly Val Ser Asn Gly Ile Val Phe Ser Pro Leu Ser Leu
                245                 250                 255
Ile Ser Trp Val Phe Ile Ala Thr Leu Ala Ala Val Gly Asn Ala Gly
            260                 265                 270
Val Pro Met Gly Cys Tyr Phe Leu Thr Ser Ser Leu Leu Ala Ser Met
        275                 280                 285
Asn Val Pro Leu Gly Leu Leu Gly Leu Ile Leu Pro Ala Tyr Ala Leu
    290                 295                 300
Leu Asp Met Leu Glu Thr Leu Ile Asn Val Trp Ser Asp Cys Cys Ile
305                 310                 315                 320
Val Ser Val Ile Asn Lys Lys Phe Ser Glu Thr Glu Asp Leu Pro Pro
                325                 330                 335
Cys Ser Tyr Thr Asn Glu
            340
```

<210>216
<211>118
<212>PRT
<213>Chlamydia trachomatis
<400>216

```
His Pro Ile Gly Thr Pro Ala Phe Pro Thr Ala Ala Lys Val Ala Ile
 1               5                  10                  15
Lys Thr Gln Leu Ile Ser Asp Lys Gly Glu Lys Thr Ile Pro Leu Glu
            20                  25                  30
Thr Pro Thr Asn Ser Thr Val Val Arg Met Asn Ala Ala Gln Ala Phe
        35                  40                  45
Ile Leu Ile Thr Glu His Arg Gly Lys Thr Lys Arg Glu Ile Val Gly
    50                  55                  60
```

```
Arg Met Cys Lys Phe Ser Ser Ala Thr Ser Met Val Lys Gly Arg Val
 65                  70                  75                  80
Thr Ala Glu Asp Leu Glu Lys Asn Ala Val Ala Arg Gly Arg Asp Met
                85                  90                  95
Ser Leu Asn Val Arg Lys Gly Glu Ile Pro Phe Ile Leu Arg Arg Arg
            100                 105                 110
Gly Arg Thr Arg Asn Pro
        115
<210>217
<211>113
<212>PRT
<213>Chlamydia trachomatis
<400>217
Met Ser Cys Ser Asn Val Asn Ser Gly Ala Pro Ala Thr Leu Phe Ala
  1               5                  10                  15
Lys Gly Ala Ala Ala Ile Ser Ser Arg Val Asp Thr Met Arg Gln Met
            20                  25                  30
Cys Ser Ala Arg Val Gly Ser Lys Thr Cys Gly Ile Ala Leu Ile Ile
        35                  40                  45
Ile Gly Leu Leu Val Ala Thr Ala Gly Val Val Ile Ala Ala Val Gly
    50                  55                  60
Ile Gly Thr Pro Ala Ser Leu Ala Ala Gly Met Ile Leu Val Met Val
 65                  70                  75                  80
Gly Ser Leu Leu Leu Gly Leu Gly Leu Ala Arg Ala Arg Ser Arg Arg
                85                  90                  95
Val Glu Ile Glu Arg Gln Leu Glu Val Val Ser Met Gln Ile Glu Glu
            100                 105                 110
Leu

<210>218
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>218
Arg Ser Phe Glu Glu Glu Tyr Lys Ala Leu Ser Glu Val Tyr Arg Ala
  1               5                  10                  15
Asn Leu Glu Ala Arg Arg Ala Val Ser Lys Tyr Cys Gln Glu Leu Glu
            20                  25                  30
Glu Lys Ile Leu Asp Leu Cys Lys Arg His Ala Ala Thr Ile Cys Ser
        35                  40                  45
Ile Glu Glu Asp Ala Lys Gln Glu Ile Arg His Gln Thr Glu Arg Phe
    50                  55                  60
Lys Gln Arg Leu Gln Gln Asn Gln Asn Thr Cys Ser Gln Ile Thr Ala
 65                  70                  75                  80
Glu Leu Cys Lys Leu Arg Ser Glu Asn Lys Ala Leu Ser Glu Arg Leu
                85                  90                  95
Gln Val Gln Ala Ser Arg Arg Lys Lys
            100                 105
<210>219
<211>190
<212>PRT
<213>Chlamydia trachomatis
<400>219
Arg Arg Arg Phe Phe Phe Thr Val Ala Asn Ser Phe Leu Arg Arg Asp
  1               5                  10                  15
Lys Ile Tyr Phe Val Phe Asn Lys Arg Glu Tyr Leu Phe Gln Asn Phe
            20                  25                  30
Gly Tyr Ser Phe Ser Tyr Arg Arg Arg Phe Ser Cys Cys Arg Trp Gly
        35                  40                  45
Ile Ser Phe Gly Phe Val Arg Tyr Asn Val Ile Phe Thr Val Ile Gly
    50                  55                  60
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Substitute Sheet (Rule 26)

```
Ile Pro Ala Leu Ile Ile Gly Ser Ala Cys Val Gly Ala Gly Ile Ser
 65                  70                  75                  80
Arg Leu Met Tyr Arg Ser Ser Tyr Ala Ser Leu Glu Ala Lys Asn Val
                85                  90                  95
Leu Ala Glu Gln Arg Leu Arg Asn Leu Ser Glu Glu Lys Asp Ala Leu
            100                 105                 110
Ala Ser Val Ser Phe Ile Asn Lys Met Phe Leu Arg Gly Leu Thr Asp
        115                 120                 125
Asp Leu Gln Ala Leu Glu Ala Lys Val Met Glu Phe Glu Ile Asp Cys
    130                 135                 140
Leu Asp Arg Leu Glu Lys Asn Glu Gln Ala Leu Leu Ser Asp Val Arg
145                 150                 155                 160
Leu Val Leu Ser Ser Tyr Thr Arg Trp Leu Asp Ser Ala Glu Lys Glu
                165                 170                 175
Lys Ala Ala Leu Lys Ala Ser Ile Asp Ala Asn Gln Ala Ser
            180                 185                 190
<210>220
<211>180
<212>PRT
<213>Chlamydia trachomatis
<400>220
Thr Glu Pro Cys Phe Arg Ile Leu Phe Tyr Thr Leu Val Ser Arg Asp
  1               5                  10                  15
Glu Arg Arg Val Lys Val Phe Tyr Val Lys Asn Ile Cys Val Phe Leu
             20                  25                  30
Pro Ser Arg Val Leu Ser Arg Pro Phe Phe Gly Pro Glu Ser Thr Met
         35                  40                  45
Ser Tyr Leu Phe Cys Ser Ser Cys Ala Pro Thr Leu Glu Ser Pro Ala
     50                  55                  60
Glu Leu Cys Leu Tyr Lys Thr His Ile Tyr Cys Lys Arg Arg Gly Asn
 65                  70                  75                  80
Ile Glu Phe Ala Val Ser Leu Gly Ile Phe Ala Ile Leu Ser Cys Val
                85                  90                  95
Ala Leu Leu Cys Leu Leu Cys Arg Gly Ser Ser Leu Val Phe Ala Gly
            100                 105                 110
Leu Gly Ile Gly Ala Ile Met Ile Gly Ser Val Ala Leu Gly Val Gly
        115                 120                 125
Leu Thr Phe Leu Tyr Trp Ser Cys Ser Arg Gly Leu Gln Asn Arg Ile
    130                 135                 140
Arg Thr Asn Ile Leu Ala Ser Ser Asp Ser Ser Ser Leu Ser Ser Ser
145                 150                 155                 160
Lys Ser Asp Phe Ser Leu Glu Phe Glu Leu Asn Glu Ala Asp Val Thr
                165                 170                 175
Ile Ser Val Ser
            180
<210>221
<211>192
<212>PRT
<213>Chlamydia trachomatis
<400>221
Leu Pro Leu Lys Tyr Ile Lys Ile Phe Thr Leu Ile Ser Phe Pro Val
  1               5                  10                  15
Ala Cys Arg Pro Phe Leu Arg Asn Arg Gly Ala Met Phe Asn Ile Ser
             20                  25                  30
Phe Cys Cys Asn Ser Ser Lys Pro Leu Arg Ala Asp His Thr Glu Thr
         35                  40                  45
Ile Gly Ala Gln Thr Thr Thr Ser Arg Lys Glu Gln Leu Leu Ala Ile
     50                  55                  60
Gly Ala Leu Val Leu Gly Val Leu Ala Val Leu Gly Gly Ala Leu Leu
 65                  70                  75                  80
Leu Leu Phe Ser Gly Ser Val Leu Ser Leu Phe Ala Pro Ile Leu Ser
```

SEQUENCE LISTING

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                85                  90                  95
Leu Leu Ala Met Thr Leu Gly Ser Ala Cys Ile Gly Gly Ser Leu Val
            100                 105                 110
Tyr Met Tyr Gly Phe Ser Leu Lys Pro Thr Arg Leu Pro Ser Glu Ser
        115                 120                 125
Ser Gly Leu Ala Pro Glu Ala Val Thr Pro Gly Leu Val Leu Ser Tyr
    130                 135                 140
Gln Glu Leu Leu Tyr Glu Ala Glu Glu Asp Leu Lys Glu Val Glu Gly
145                 150                 155                 160
Leu Leu Ala Gln Lys Ser Lys Asp Leu Glu Leu Ala Gln Lys Lys Ile
                165                 170                 175
Glu Gln Leu Gln Ser Gly Leu Lys Cys Val Leu Glu Glu Ser Leu Arg
            180                 185                 190
<210>222
<211>135
<212>PRT
<213>Chlamydia trachomatis
<400>222
Gly Ile Val Val Gln Gln Lys Leu Arg Tyr Ser Glu Asn Val Ala Asn
  1               5                  10                  15
Asn Ser Phe Ile His Arg Ser Lys Arg Tyr Gln Leu Phe Val Val Val
             20                  25                  30
Leu Thr Ser Leu Leu Ala Ala Leu Gly Gly Val Phe Leu Cys Leu Gly
         35                  40                  45
Gly Val Tyr Ser Ser Leu Val Leu Gly Val Val Gly Gly Ala Ala Ile
     50                  55                  60
Ile Gly Ser Cys Ile Gly Ala Phe Gly Leu Val Ser Tyr Leu Leu Ser
 65                  70                  75                  80
Val Ile Arg Asn Ser Asp Gln Leu Leu Gln Glu Ala Lys Glu Ser Asp
                85                  90                  95
Arg Lys Ile Ser Ser His Tyr Arg Val Leu Glu Thr Gln Lys Asn Arg
            100                 105                 110
Glu Ile Gly Leu Leu Glu Glu Arg Val Asn Met Leu Asp Gly Phe Tyr
        115                 120                 125
Ala Lys Phe His Gly Trp Asp
    130                 135
<210>223
<211>164
<212>PRT
<213>Chlamydia trachomatis
<400>223
Arg Lys Ala Ser Leu Leu Ile Thr Asp Leu Phe Tyr Leu Lys Trp Asp
  1               5                  10                  15
Ala Met Ser Phe Val Gly Asp Ser Val Pro Leu Arg Ser Tyr Met Pro
             20                  25                  30
Glu Ala Pro Leu Val Asp Ser Ala Ser Lys Ala Arg Val Ser Cys Cys
         35                  40                  45
Ser Glu Arg Ile Ala Val Leu Ala Leu Gly Ile Leu Ser Ile Leu Phe
     50                  55                  60
Ile Val Thr Gly Ala Ala Leu Phe Ile Gly Ala Gly Trp Thr Thr Leu
 65                  70                  75                  80
Pro Met Ile Asn Val Val Val Thr Leu Val Val Phe Gly Ser Val Met
                85                  90                  95
Leu Gly Ala Val Leu Thr Arg Ile Ser Gly Tyr Gly Gly Glu Pro Lys
            100                 105                 110
Lys Val Ser Leu Asp Arg Phe Val Leu Glu Asn Glu Arg Gln Gly Phe
        115                 120                 125
Leu Asp Lys Gln Arg Leu Ala Asp Ile Ser Lys Glu Glu Ile Ala Leu
    130                 135                 140
Ala Lys Gln Gln Ile Glu Glu Glu Lys Glu Ala Ile Leu His Ser Ile
145                 150                 155                 160
```

Phe Pro Asn Asp

<210>224
<211>273
<212>PRT
<213>Chlamydia trachomatis
<400>224

```
Arg Lys Gly Gly Lys Met Val Ser Leu Ala Leu Gly Thr Ser Asn Arg
  1               5                  10                  15
Val Glu Ala Asn Asn Gly Ile Asn Asp Leu Ser Pro Ala Pro Glu Ala
             20                  25                  30
Lys Lys Thr Gly Phe Gly Leu Cys Tyr Lys Ile Ser Ala Val Ala Ala
         35                  40                  45
Leu Val Leu Gly Leu Leu Ala Ala Ala Gly Gly Ala Val Val Leu Ala
     50                  55                  60
Leu Phe Cys Thr Phe Thr Pro Pro Leu Phe Phe Tyr Ala Gly Val Ala
 65                  70                  75                  80
Leu Val Ala Leu Gly Ala Val Ile Leu Gly Val Gly Val Ser Asn Thr
                 85                  90                  95
Cys Ser Cys Cys Leu Arg Ser Lys Arg Ile Glu Ala Arg Glu Gln Leu
            100                 105                 110
Leu Leu Gln Gln Lys Glu Glu Ile Ser Gln Leu Glu Gln Gln Leu Ala
        115                 120                 125
Lys Ala Leu Gly Glu Leu Asp Thr Lys Cys Ala Ser Leu Leu Glu Arg
    130                 135                 140
Arg Asp Leu Arg Glu Asn Leu Lys Ala Trp Gln Ala Tyr Cys Leu Asn
145                 150                 155                 160
Leu Glu Glu Asp Val Arg Asp Leu Leu Lys Lys Leu Glu Gly Tyr Gln
                165                 170                 175
Glu Arg Leu Lys Val Leu Pro Ala Lys Glu Lys Gln Ile Glu Glu Leu
            180                 185                 190
Lys Ala Met Leu Glu His Tyr Ser Arg Ile Cys Tyr Glu Arg Gly Asp
        195                 200                 205
Leu Ile Arg Met Leu Lys Thr Ala Asn Lys Lys Leu Ser Lys Glu Cys
    210                 215                 220
Glu Lys Leu Leu Leu Asn Tyr Lys Ala His Leu Asp Val Cys Leu Gly
225                 230                 235                 240
Glu Lys Val Leu Ala Lys Ser Val Asn Leu Ile Asp Leu Asp Leu Lys
                245                 250                 255
Ser Asp Ser Ser Asp Gly Asp Asp Tyr Asp Phe Asn Tyr Gly Ser Arg
            260                 265                 270
Val
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<210>225
<211>132
<212>PRT
<213>Chlamydia trachomatis
<400>225

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Leu Arg Ser Asp Met Arg Cys Cys Cys Val Arg Thr Asn Cys Glu Glu
  1               5                  10                  15
Val Arg Ser Ser Ser Thr Gly Asp Gln Val Val Ser Ala Val Lys Glu
             20                  25                  30
Arg Lys Cys Asp Ser Ser Leu Arg Arg Lys Ile Ala Ser Val Ala Phe
         35                  40                  45
Thr Leu Ile Gly Ala Leu Leu Leu Gly Ile Gly Met Val Leu Ser Phe
     50                  55                  60
Ala Leu Leu Gly Ser Ser Ala Gly Leu Ile Gly Val Gly Val Leu Ser
 65                  70                  75                  80
Ala Leu Gly Ala Val Cys Leu Ser Leu Gly Leu Tyr Lys Leu Phe Leu
                 85                  90                  95
Arg Met Lys Arg Val Ser Leu Asp Lys Ala Glu Gln Lys Met Leu Glu
```

```
            100                 105                 110
Asp Gln Val Glu Leu Leu Arg Gln Glu Asn Gln Glu Leu Lys Ala Ile
        115                 120                 125
Ser Val Phe His
    130
<210>226
<211>298
<212>PRT
<213>Chlamydia trachomatis
<400>226
Met Ala His Thr Ile Arg Phe Thr Lys Phe Ser Phe Pro Leu Tyr Phe
  1               5                  10                  15
Ser Lys Thr Leu Ser Trp Phe Ile Ile Gly Gly Phe Leu Ala Ala Cys
             20                  25                  30
Val Val His Met Ile Leu Ala Pro Asn Asp Leu Ile Asp Gly Gly Ile
         35                  40                  45
Val Gly Leu Ser Met Ile Ala Ala His Ser Phe Gly His Gln Phe Leu
     50                  55                  60
Pro Val Phe Leu Val Leu Phe Asn Leu Pro Phe Ile Ile Leu Ala Tyr
 65                  70                  75                  80
Lys Arg Ile Gly Lys Tyr Phe Val Val Gln Met Ile Thr Ala Val Ile
                 85                  90                  95
Ile Phe Ser Cys Trp Leu Trp Leu Ile Glu Val Leu Pro Glu Trp Leu
            100                 105                 110
Gly Ile Gln Pro Phe Ile Phe Asp Gly Ser Glu Ile Glu Thr Ile Val
        115                 120                 125
Leu Gly Gly Val Val Leu Gly Ala Gly Gly Gly Leu Ile Ile Arg His
    130                 135                 140
Gly Gly Ala Thr Asp Gly Thr Glu Ile Leu Gly Ile Ile Val Asn Lys
145                 150                 155                 160
Lys Arg Gly Tyr Thr Val Gly Gln Val Ile Leu Phe Val Asn Phe Phe
                165                 170                 175
Ile Phe Ser Leu Gly Gly Ile Val Tyr Arg Asn Trp His Thr Ala Phe
            180                 185                 190
Met Ser Leu Leu Thr Tyr Ala Val Ala Ile Lys Val Met Asp Met Val
        195                 200                 205
Ile Leu Gly Phe Glu Asp Thr Lys Ser Val Thr Ile Ile Thr Ser Ser
    210                 215                 220
Pro Arg Lys Leu Gly Asn Ile Leu Met Glu Thr Leu Gly Val Gly Leu
225                 230                 235                 240
Thr Tyr Leu His Ala Glu Gly Gly Phe Ser Gly Glu Pro Arg Asn Leu
                245                 250                 255
Leu Tyr Ile Val Val Glu Arg Leu Gln Leu Ser Gln Leu Lys Glu Ile
            260                 265                 270
Val His Arg Glu Asp Pro Ser Ala Phe Ile Ala Ile Glu Asn Leu His
        275                 280                 285
Glu Val Ile Asn Glu Lys Arg Thr Ser His
    290                 295
<210>227
<211>192
<212>PRT
<213>Chlamydia trachomatis
<400>227
Met Lys Arg Tyr Val Val Gly Ile Ser Gly Ala Ser Gly Ile Xaa Leu
  1               5                  10                  15
Ala Val Thr Leu Val Ser Glu Leu Ala Arg Leu Gly His His Ile Asp
             20                  25                  30
Val Ile Ile Ser Pro Ser Ala Gln Lys Thr Leu Tyr Tyr Glu Leu Asp
         35                  40                  45
Thr Lys Ser Phe Leu Ser Thr Ile Pro Gln Asn Phe His Asn Gln Ile
     50                  55                  60
```

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Val Leu His His Ile Ser Ser Ile Glu Ser Ser Val Ser Ser Gly Ser
 65                  70                  75                  80
Asn Thr Val Asp Ala Thr Ile Ile Val Pro Cys Ser Val Ala Thr Val
                85                  90                  95
Ala Ala Ile Ser Cys Gly Leu Ala Asp Asn Leu Leu Arg Arg Val Ala
            100                 105                 110
Asp Val Ala Leu Lys Glu Lys Arg Pro Leu Ile Leu Val Pro Arg Glu
        115                 120                 125
Ala Pro Leu Ser Ala Ile His Leu Glu Asn Leu Leu Lys Leu Ala Gln
    130                 135                 140
Asn Gly Ala Val Ile Leu Pro Pro Met Pro Ile Trp Tyr Phe Lys Pro
145                 150                 155                 160
Gln Thr Ala Glu Asp Ile Ser Asn Asp Ile Val Gly Lys Ile Leu Ala
                165                 170                 175
Ile Leu Gln Leu Asp Ser Pro Leu Ile Lys Arg Trp Glu Asn Pro Arg
            180                 185                 190
<210>228
<211>72
<212>PRT
<213>Chlamydia trachomatis
<400>228
Lys Phe Ser Lys Cys Ile Ala Asp Arg Gly Ala Ser Arg Gly Thr Arg
  1                 5                  10                  15
Ile Arg Gly Leu Phe Ser Phe Arg Ala Thr Ser Ala Thr Leu Leu Lys
             20                  25                  30
Arg Leu Ser Ala Lys Pro His Glu Ile Ala Ala Thr Val Ala Thr Leu
         35                  40                  45
Gln Gly Thr Ile Ile Val Ala Ser Thr Val Phe Glu Pro Asp Asp Thr
     50                  55                  60
Glu Leu Ser Ile Glu Asp Ile Trp
 65                  70
<210>229
<211>302
<212>PRT
<213>Chlamydia trachomatis
<400>229
Met Ser Arg Ile Val Leu Ile Gln Gln Leu Ile Lys Cys Lys Tyr Ala
  1                 5                  10                  15
Leu Phe Ala Ala Leu Phe Leu Ala Ser Ser Thr Leu Phe Cys Phe Ser
             20                  25                  30
Leu Pro Cys Thr Pro Phe Ser Leu Phe Ser Leu Gly Ser Ile Lys Thr
         35                  40                  45
Ile Ser Leu Gly Gly Ser Ala Phe Phe Ile Ala Arg Ala Leu Gly Met
     50                  55                  60
Ile Val Asn Gln Val Val Asp Cys Ala Ile Asp Lys Arg Asn Pro Arg
 65                  70                  75                  80
Thr Gln Ser Arg Val Leu Pro Ala Glu Leu Leu Ser Ile Lys His Ser
                85                  90                  95
Met Leu Leu Leu Thr Leu Cys Leu Ile Leu Phe Leu Ser Thr Cys Trp
            100                 105                 110
Leu Phe Asn Pro Leu Cys Phe Ser Leu Ala Val Leu Ser Thr Leu Ile
        115                 120                 125
Met Ile Ile Tyr Pro Tyr Thr Lys Arg Phe Thr Phe Leu Cys His Trp
    130                 135                 140
Ile Leu Gly Leu Val Tyr Tyr Leu Ala Ile Leu Met Asn Phe Phe Ala
145                 150                 155                 160
Ile Ile Glu Thr Pro Ser Phe Ser Leu Phe Cys Met Ser Ser Leu Leu
                165                 170                 175
Gly Ile Ser Phe Gly Met Ile Ile Ala Ala Asn Asp Ile Ile Tyr Ala
            180                 185                 190
Leu Gln Asp Val Glu Phe Asp Gln Lys Glu Gly Leu Phe Ser Ile Pro
```

195 200 205
Ala Arg Phe Gly Thr Lys Gln Ala Ile Thr Ile Ala Ser Ala Asn Leu
210 215 220
Ile Xaa Ser Ala Ile Ala Tyr Leu Leu Ile Gly Tyr Phe Val Pro Asn
225 230 235 240
Lys Thr Ile Phe Tyr Leu Cys Ser Leu Val Pro Leu Thr Gly Ile Leu
245 250 255
Arg Thr Ile Lys His Tyr Ser Leu Ile Asp Pro Arg Ala Lys Ser Thr
260 265 270
Leu Gln Gln Asn Phe Phe Leu Gly Asn Leu Ser Leu Gly Ile Ala Phe
275 280 285
Phe Ala Asn Met Ile Gly Leu Phe Leu Leu Arg Gly Ile Leu
290 295 300

<210>230
<211>177
<212>PRT
<213>Chlamydia trachomatis
<400>230
Trp Glu Lys Phe Arg Thr Leu Pro Leu Leu Leu Cys His Cys Arg Ser
1 5 10 15
Tyr Lys Arg Ser Glu Ser Pro Trp Asn Ser Cys Asp Ser Leu Ser Gln
20 25 30
Ser Glu Asn Ile Ala Phe Phe Gln Glu Ala His Met Ala Ser Leu Ile
35 40 45
Arg Ser Leu Cys Glu Phe Thr Val Ala Tyr Lys His Thr Asp Pro Leu
50 55 60
Gly Leu Asn Val Asn Phe Pro Ala Ser Ala Asp Asp Ser Pro Trp Lys
65 70 75 80
Gly Ile Arg Phe Thr Leu Ser Gly Asn Glu Phe Leu Phe Gly Ile Pro
85 90 95
Arg Leu Val Arg Thr Glu Gly Asn Arg Arg Tyr Tyr Thr Leu Tyr Asp
100 105 110
Met Arg Asp Lys Val Ser Glu Glu Phe Ser Glu Glu Tyr Leu Ala Leu
115 120 125
Ala Asn Asn Tyr Ile Ser Ala Ala Pro Leu Val Ser Lys Asn Thr Pro
130 135 140
Arg Ala Thr Leu Ser Glu Glu Glu Leu Ala Phe Leu Lys Asp Ser Phe
145 150 155 160
Glu Gln Ser Val Leu Trp Lys Ala Ser Leu Asn Leu Glu Glu Asp Leu
165 170 175
Ala

<210>231
<211>162
<212>PRT
<213>Chlamydia trachomatis
<400>231
Met Arg Asn Glu Lys Tyr Lys Arg Gly Leu Met Thr Glu Thr Arg Arg
1 5 10 15
Leu Arg Ile Leu Ile Thr Asn Asp Asp Gly Ile Lys Ala Lys Gly Ile
20 25 30
Ser Leu Leu Ile Ser Leu Leu Arg Glu Ala Asp Phe Ala Asp Leu Tyr
35 40 45
Val Val Ala Pro Leu Glu Glu Gln Ser Gly Arg Ser Met Ala Phe Ser
50 55 60
Leu Val Glu Pro Thr Ala Leu Glu Pro Phe Asp Tyr Pro Gln Arg Val
65 70 75 80
Gln Glu Ala Trp Ala Val Thr Gly Thr Pro Val Asp Cys Val Lys Leu
85 90 95
Ala Ile Gly Glu Leu Phe Lys Glu Asn Ala Leu Asp Leu Ile Leu Ser
100 105 110

```
Gly Ile Asn Asn Gly Lys Asn Ser Gly Arg Cys Leu Tyr Tyr Ser Ala
        115                 120                 125
Thr Val Gly Ala Ile Arg Glu Ala Asn Leu His Gly Ile Pro Ala Ile
    130                 135                 140
Val Phe Leu Lys Val Arg Ile Ser Leu Phe Ser Lys Lys Leu Ile Trp
145                 150                 155                 160
Pro Pro
```

<210>232
<211>236
<212>PRT
<213>Chlamydia trachomatis
<400>232

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Lys Phe Ser Ala Gln Ser Val Tyr Thr His Ala Met Leu Gln Lys His
  1               5                  10                  15
Thr Arg Ile Ala Val Ala Leu Ser Gly Gly Lys Asp Ser Leu Ser Leu
             20                  25                  30
Leu Leu Met Leu Lys Ala Ile Ser Gly Arg Gly Phe Pro Glu Leu Thr
         35                  40                  45
Ile His Ala Ile His Ile Gly Gly Lys Tyr Ser Cys Gly Ala Ala Val
     50                  55                  60
Ser Gly Asn Tyr Leu Ser Ser Ile Cys Asp Lys Ile Gln Val Pro Leu
 65                  70                  75                  80
Ile Ser Ile Pro Ser Pro Tyr Glu Thr Glu Asn Pro Glu Cys Tyr Thr
                 85                  90                  95
Cys Ser Arg Ile Arg Arg Arg Leu Leu Phe Asp Thr Ala Lys Ala Val
            100                 105                 110
Gly Ala Thr Ala Val Ala Phe Gly His His Arg Asp Asp Val Val Gln
        115                 120                 125
Thr Thr Leu Met Asn Leu Leu His Lys Ala Glu Phe Ala Gly Met Leu
    130                 135                 140
Pro Val Val Asp Met Val Asn Phe Gly Ile Thr Ile Leu Arg Pro Leu
145                 150                 155                 160
Ile Phe Ile Pro Glu Asp Leu Ile Arg Lys Phe Ala Lys Glu Ser Gly
                165                 170                 175
Phe Ala Arg Ile Thr Cys Arg Cys Pro Val Ile Ser Leu Arg Thr Lys
            180                 185                 190
Thr Glu Glu Ala Leu Lys Thr Leu Glu Thr Ile Phe Pro Gln Ala Arg
        195                 200                 205
His Asn Ile Ala Leu Ala Val Arg Glu Thr Gly Leu Ser Lys Ala Asn
    210                 215                 220
Arg Val Glu Gln Tyr Asp Ser Leu Leu Thr Glu Thr
225                 230                 235
```

<210>233
<211>465
<212>PRT
<213>Chlamydia trachomatis
<400>233

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Ala Ser Ser Gln Ile Phe Tyr Pro Ile Gly Tyr Phe Tyr Cys Arg Asp
  1               5                  10                  15
Val Ile Pro Cys Ser Ser Tyr Gln Phe Thr Lys Pro Ser Phe Asn Ser
             20                  25                  30
Lys Thr Trp Leu Ile Tyr Ser Ile Leu Leu Ser Val Ala Val Ala Cys
         35                  40                  45
Phe Met Ile Pro Tyr Ala Leu Ile Ala Ala Glu Leu Ala Ser Phe Lys
     50                  55                  60
Pro Gln Gly Ile Tyr Val Trp Thr Arg Asp Ala Leu Gly Lys Arg Trp
 65                  70                  75                  80
Gly Phe Phe Ala Ile Trp Met Gln Trp Phe His Asn Met Thr Trp Tyr
                 85                  90                  95
Pro Ala Met Leu Ala Phe Ile Ala Ser Thr Leu Val Tyr Gln Ile Ser
```

Application Search

```
            100                 105                 110
Pro Asp Leu Ala Asn Asn Arg Leu Tyr Leu Ser Ser Val Ile Leu Leu
        115                 120                 125
Gly Phe Trp Gly Leu Thr Phe Phe Asn Phe Leu Gly Ile Gly Thr Ser
    130                 135                 140
Ala Leu Phe Ser Ser Ile Cys Val Ile Val Gly Thr Leu Ile Pro Gly
145                 150                 155                 160
Ala Ile Leu Val Ala Phe Ala Ala Tyr Trp Ile Gln Gly Gly Asn Pro
                165                 170                 175
Ile Ala Ile Asn Phe Ser Trp Ser Glu Leu Leu Pro Asp Phe Ser Ser
            180                 185                 190
Pro Ser Ser Phe Val Leu Leu Ser Gly Met Leu Leu Ala Leu Cys Gly
        195                 200                 205
Leu Glu Ala Asn Ala Asn Leu Ala Ser Asp Met Glu Asp Pro Lys Arg
    210                 215                 220
Asn Tyr Pro Lys Ala Val Phe Ile Gly Ala Val Ser Thr Leu Ala Ile
225                 230                 235                 240
Leu Val Leu Gly Ser Leu Ala Ile Ala Ile Val Ile Pro Lys Glu Glu
                245                 250                 255
Ile Ser Leu Val Ser Gly Leu Ile Arg Ala Phe Ser Leu Phe Phe Glu
            260                 265                 270
Lys Tyr Asn Leu Ser Trp Met Thr Gly Ile Ile Val Ala Met Thr Ile
        275                 280                 285
Ala Gly Ser Leu Gly Glu Leu Asn Ala Trp Met Phe Ala Gly Thr Lys
    290                 295                 300
Gly Leu Phe Ile Ser Thr Gln Asn Asp Cys Leu Pro Lys Ile Phe Lys
305                 310                 315                 320
Lys Thr Asn Ser Arg Asp Val Pro Thr Asn Leu Met Leu Phe Gln Ala
                325                 330                 335
Ile Val Val Thr Leu Phe Thr Phe Ile Phe Val Tyr Val Asp Ser Ala
            340                 345                 350
Asp Leu Ala Tyr Trp Ile Leu Ser Ala Leu Ser Leu Gln Met Tyr Leu
        355                 360                 365
Val Met Tyr Ile Cys Leu Phe Ile Val Gly Pro Val Leu Arg Ile Lys
    370                 375                 380
Glu Pro Lys Ala Gln Arg Leu Tyr Ser Val Pro Gly Lys Leu Val Gly
385                 390                 395                 400
Met Cys Val Leu Ser Thr Leu Gly Ile Leu Ser Cys Leu Phe Ala Leu
                405                 410                 415
Gly Ile Ser Phe Leu Pro Pro Gln Glu Val Val Ser Phe Ser Thr Met
            420                 425                 430
Gly Gly Asn Phe Gly Tyr Thr Ala Leu Leu Leu Leu Ala Phe Val Ile
        435                 440                 445
Asn Cys Cys Ile Pro Phe Gly Met Tyr Tyr Ser His Lys Lys Leu Ile
    450                 455                 460
Lys
465
<210>234
<211>308
<212>PRT
<213>Chlamydia trachomatis
<400>234
Glu His Leu Arg Met Thr Thr Ile Phe Asp Leu Leu Gly Lys Asp Ala
  1               5                  10                  15
Asp Tyr Leu Leu Asn His Lys Cys Val Ile Lys Lys Glu Ala Leu Thr
            20                  25                  30
Leu Pro Ser Gly Asp Phe Val Ser Arg Val Phe Ala Glu Ser Asp Arg
        35                  40                  45
Asn Asn Arg Val Leu Arg Ser Leu Gln Gln Met Phe Ser Tyr Gly Arg
    50                  55                  60
Leu Gly Gly Thr Gly Tyr Leu Ser Ile Leu Pro Val Asp Gln Gly Val
```

```
 65                  70                  75                  80
Glu His Thr Ala Gly Ala Ser Phe Ala Lys Asn Pro Met Tyr Phe Asp
                 85                  90                  95
Pro Glu Asn Ile Val Arg Leu Ala Met Glu Ala Gly Cys Ser Ala Val
            100                 105                 110
Ala Ser Ser Tyr Gly Val Leu Ser Ile Leu Ala Arg Arg Tyr Ala His
        115                 120                 125
Lys Ile Pro Phe Leu Leu Lys Leu Asn His Asn Glu Leu Leu Ser Tyr
    130                 135                 140
Pro Thr Thr Tyr His Gln Ile Phe Phe Ser Gln Val Glu Asp Ala Tyr
145                 150                 155                 160
Asn Met Gly Ala Val Ala Val Gly Ala Thr Ile Tyr Phe Gly Ser Glu
                165                 170                 175
Ser Ser Ser Glu Glu Ile Val Ala Val Ala Glu Ala Phe Ala Arg Ala
            180                 185                 190
Arg Glu Leu Gly Leu Ala Thr Val Leu Trp Cys Tyr Leu Arg Asn Pro
        195                 200                 205
His Phe Val Val Asn Asn Val Asp Tyr His Thr Ala Ala Asp Leu Thr
    210                 215                 220
Gly Gln Ala Asp His Leu Gly Ala Thr Leu Gly Ala Asp Ile Val Lys
225                 230                 235                 240
Gln Lys Leu Pro Thr Leu Gln Gly Gly Phe Lys Thr Ile Asn Phe Ser
                245                 250                 255
Lys Thr Asp Asp Leu Val Tyr Ser Glu Leu Ser Ser Asn His Pro Ile
            260                 265                 270
Asp Leu Cys Arg Tyr Gln Val Leu Asn Ser Tyr Cys Gly Lys Val Gly
        275                 280                 285
Leu Ile Asn Ser Gly Ala Leu Leu Gly Lys Met Thr Leu Leu Lys Gln
    290                 295                 300
Leu Lys Gln Gln
305
<210>235
<211>553
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<213>Chlamydia trachomatis
<400>235
Lys Glu Lys Ile Val Phe Met Arg Thr Asp Ser Pro Leu Asn Pro Pro
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Asp Ser Thr Arg Gly Val Phe Gln Phe Leu Glu Thr Gln Cys Asp Arg
             20                  25                  30
Ala Met Ala Arg Ser Arg Gln Ser Gln Phe Ile Gly Leu Val Ser Ala
         35                  40                  45
Val Ala Ala Ala Ala Leu Leu Leu Leu Leu Val Val Ala Leu Ser Val
     50                  55                  60
Pro Gly Phe Pro Val Ala Ala Ser Ile Val Val Gly Val Leu Phe Ala
 65                  70                  75                  80
Leu Ser Ile Val Ala Leu Thr Ala Ser Phe Leu Val Tyr Ile Ala Asn
                 85                  90                  95
Ala Lys Leu Val Ala Ile Arg Ile Lys Phe Leu Ser Ser Gly Leu Gln
            100                 105                 110
Asp His Phe Ser Glu Ser Pro Ile Leu Gly Thr Leu Arg Lys Gly Arg
        115                 120                 125
Gly Ala Ser Ile Pro Leu Ile Ser Gly Gln Ala Asp Asp Ser Leu Pro
    130                 135                 140
Asn Arg Ile Gly Ile Lys Lys Ser Ala Glu Met Arg Val Leu Gln Lys
145                 150                 155                 160
Gly Ile Gly Thr Asp Tyr Lys Lys Tyr Lys Gln His Leu Asp Arg Val
                165                 170                 175
Asn Asn Asp Phe Thr Phe Val Cys Glu Gly Ile Ser Ala Leu Ile Pro
            180                 185                 190
Thr Glu Lys Asp Ala Pro Phe Pro Ile Glu Pro Ser His Leu Ala Gly
```

6000 1 6000 6000

6603-1-6626-6

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         195                 200                 205
Val Phe Leu Val Ser Phe Ser Pro Asp Lys Asn Pro Ile Leu Lys Ile
    210                 215                 220
Thr Arg His Ala Glu Lys Met Leu Gln Pro Pro Gln Gly Gly Phe Pro
225                 230                 235                 240
Asn Gly Leu Val Trp Leu Cys Gly Ala Leu Ser Asp Pro Lys Lys Phe
                245                 250                 255
Ala Ala Pro Phe Leu Ser Leu Ile Glu Lys Thr His Gln Gly Ile Leu
            260                 265                 270
Val Ser Lys Asp Leu Lys Asp Asn Lys Glu Arg Lys Leu Ala Leu Glu
        275                 280                 285
Ala Ser Leu Leu Ser Leu Asn Ile Phe Phe Ser Gly Trp Cys Leu Gly
    290                 295                 300
Asn Pro Glu Tyr Asn Gln Tyr Ile Thr Thr Ala Val Ala Glu Lys Tyr
305                 310                 315                 320
Lys Asp Val Ser Val Arg Asn Arg Ile Tyr Asp Phe Leu Asp Thr Gly
                325                 330                 335
Asn Val Ile Ser Ala Leu Ala Leu Ala Ser Xaa Tyr Ser Gln Asp Ser
            340                 345                 350
Ala Trp Ala Ala Gly Leu Gln Lys Val Leu Arg Glu Glu Asp Lys Lys
        355                 360                 365
Thr Lys Lys Lys Ser Arg Glu Glu Val Ser Cys Leu Tyr Arg Asp Ile
    370                 375                 380
Asp Pro Gly Cys Cys Leu Arg Ala Leu Pro Lys Arg Phe Glu Ser Lys
385                 390                 395                 400
Ser Ser Gly Ser Gln Gly Ser Pro Lys Glu Gln Leu Ser Ser Leu Leu
                405                 410                 415
Lys Ala Leu Asp Gln Lys Ile Pro Ser Gly Val Leu Gly Leu Ile Ala
            420                 425                 430
Lys Ala Ser Ser Ala Asp Leu Lys Ala Asp Phe Ala Gly Met Leu Glu
        435                 440                 445
Val Ile Lys Gln Leu Gln Ala Leu Phe Asp Ser Tyr Pro Pro Leu Cys
    450                 455                 460
Glu Asp Asn Ile Leu Leu Trp Leu Ser Ala Ser Leu Glu Gln Val Gly
465                 470                 475                 480
Leu Gln Lys Lys Leu Arg Thr Phe Leu Pro Ser Ser Glu Lys Lys Leu
                485                 490                 495
Leu Glu Arg Val Leu Ser Thr Phe Leu Leu Gly Leu Tyr Thr Arg Gly
            500                 505                 510
Val Phe Ser Val Gly Gln Val Asn Gln Leu Ala Thr Ile Cys Asn Thr
        515                 520                 525
Gln Asp Ser Thr Glu Phe Cys Gln Arg Val Ser Asp Leu Ser Leu Ile
    530                 535                 540
Lys Arg Ala Leu Pro Ala Leu Phe Gly
545                 550
<210>236
<211>257
<212>PRT
<213>Chlamydia trachomatis
<400>236
Leu Arg Asn Arg Ser Pro Pro Phe Leu Asp Ser Phe Glu Arg Phe Met
  1               5                  10                  15
Ser Lys Gln Pro Glu Asn Ser Phe Ser Ser Asp Lys Phe Phe Pro Ile
            20                  25                  30
Lys Gln Lys Leu Ala Leu Glu Ala Val Ala Leu Val Glu Pro Gly Met
        35                  40                  45
Cys Val Gly Leu Gly Ser Gly Ser Thr Ala Arg Glu Phe Ile Leu Ala
    50                  55                  60
Leu Gly Asp Arg Val Arg Thr Glu Arg Leu Val Ile Thr Ala Val Ala
65                  70                  75                  80
Ser Ser Arg Ile Ser Gln Leu Leu Ala Glu Ala Val Gly Ile Pro Leu
```

85 90 95
Leu Asp His Ser Leu Leu Gln Asp Val Asp Leu Val Val Asp Gly Ala
100 105 110
Asp Glu Val Asp Pro Cys Leu Arg Met Ile Lys Gly Gly Gly Gly Ala
115 120 125
Leu Phe Arg Glu Lys Ile Leu Leu Gln Ser Gly Lys Arg Asn Val Ile
130 135 140
Leu Val Asp Glu Arg Lys Leu Val Pro Thr Leu Gly Lys Phe Ser Leu
145 150 155 160
Pro Ile Glu Ile Ala Pro Phe Gly Cys Ser Ser Val Gln Arg Ile Leu
165 170 175
Asn Lys Gln Gly Tyr Phe Gly Glu Trp Arg Glu Thr Ser Ala Gly Glu
180 185 190
Arg Phe Ile Thr Asp Asn Gly Asn Tyr Ile Tyr Asp Val Arg Thr Pro
195 200 205
Asp Ser Tyr Ala Asn Pro Glu Glu Asp Met Ile Arg Leu Leu Gln Ile
210 215 220
Arg Gly Ile Ile Asp Val Gly Phe Val Ile Ala Lys Ala Glu Val Trp
225 230 235 240
Val Gly Tyr Ala Asp Gly Ser Ile Val Arg Lys Lys Glu His Asn Glu
245 250 255
Tyr

<210>237
<211>155
<212>PRT
<213>Chlamydia trachomatis
<400>237
Leu Ser Glu Lys Lys Asn Ile Met Asn Ile Asp Arg Glu Ile Ile Ser
1 5 10 15
Asp Thr Ser Leu Ile Leu Ile Asn Phe Tyr Lys Leu Val Ser Phe Arg
20 25 30
Asn Tyr Ala Gly Ile Ile Leu Gly Thr Asp Glu Lys Gln Phe Ala Ile
35 40 45
Tyr Gly His Ala Ser Met Asp Thr Ala Phe Lys Lys Arg Glu Asp Leu
50 55 60
Ala Ala Glu Glu Glu Arg Ser Arg Pro Ser Thr His Asp Val Leu Asn
65 70 75 80
Phe Val Leu Thr Ser Phe Asp Leu Ser Val Val Arg Val Val Ile Thr
85 90 95
Glu Tyr Lys Asp Asn Val Phe Tyr Ser Arg Leu Phe Leu Glu Gln Lys
100 105 110
Arg Gly Asp Arg Leu Tyr Ile Ala Asp Ile Asp Ala Arg Pro Ser Asp
115 120 125
Ser Ile Pro Leu Ala Ile Lys Tyr Gln Val Pro Ile Leu Cys Val Lys
130 135 140
Ser Ile Phe Asp Glu Ala Ile Pro Tyr Glu Asp
145 150 155
<210>238
<211>191
<212>PRT
<213>Chlamydia trachomatis
<400>238
Asp Val Met Thr Lys Leu Pro Tyr Ala Leu Leu Asp Lys Gly Ser Leu
1 5 10 15
Leu Val Ala Ser Pro Asp Val Asn Gly Gly Ile Phe Ser Arg Ser Val
20 25 30
Val Leu Leu Cys Glu His Ser Pro Asn Gly Ser Phe Gly Leu Ile Leu
35 40 45
Asn Lys Ile Leu Glu Ile Asp Ser Pro Glu Glu Ile Phe Pro Leu Asp
50 55 60

```
His Phe Asp Glu Ser Lys Val Arg Phe Cys Met Gly Gly Pro Leu Gln
 65                  70                  75                  80
Ala Asn Gln Ile Met Leu Leu His Thr Ser Pro Asp Ser Ala Asn Ser
                85                  90                  95
Ser Ile Glu Ile Cys Pro Ser Val Phe Leu Gly Gly Asp Phe Ser Phe
            100                 105                 110
Ala Gly Glu Lys Glu Gly Arg Thr Arg Asp Asp Lys Met Leu Leu Cys
        115                 120                 125
Phe Gly Tyr Ser Gly Trp Gln Gly Gly Gln Leu Glu Lys Glu Phe Leu
    130                 135                 140
Glu Gly Leu Trp Phe Leu Ala Pro Ser Ser Gln Glu Ile Ile Phe Thr
145                 150                 155                 160
Asp Ala Pro Glu Arg Met Trp Ser Asp Val Leu Gln His Leu Gly Gly
                165                 170                 175
Arg Phe Ala Ser Leu Ser Thr Ile Pro Glu Asn Leu Leu Leu Asn
            180                 185                 190
<210>239
<211>358
<212>PRT
<213>Chlamydia trachomatis
<400>239
Leu Leu Phe Leu Arg Phe Ser Leu Leu Thr Thr Ala Leu His Leu Glu
  1                 5                  10                  15
Arg Asn Lys Arg Gln Thr Tyr Thr Met Ser Glu Ile Glu Ile Lys Ser
             20                  25                  30
Ser Pro Val Cys Glu Ser Ile Ile Phe Phe Leu Met Arg Ser Trp Tyr
         35                  40                  45
Thr Leu Pro Phe Pro Gln Ser Leu Gln Arg Ser Leu Leu Met Ser His
     50                  55                  60
Leu Phe Ser Lys Ala Cys Gln Tyr Phe Pro Gly Gly Val Asn Ser Pro
 65                  70                  75                  80
Val Arg Ala Cys Arg Ala Val Asn Ile Thr Pro Pro Ile Val Ala Arg
                85                  90                  95
Ala Ser Lys Glu Val Phe Ile Asp Ser Leu Asp Lys Thr Phe Ile Asp
            100                 105                 110
Phe Cys Gly Ser Trp Gly Ser Leu Ile His Gly His Ser His Pro Lys
        115                 120                 125
Ile Cys Ala Ala Ile Arg Gln Gly Leu Glu Arg Gly Ser Ser Tyr Gly
    130                 135                 140
Leu Thr Ser Glu Gln Glu Ile Leu Phe Ala Glu Glu Ile Phe Ser Tyr
145                 150                 155                 160
Leu Gly Leu Glu Thr Asn Tyr Lys Ile Arg Phe Met Ser Thr Gly Ser
                165                 170                 175
Glu Ala Thr Met Thr Ala Val Arg Leu Ala Arg Gly Ile Thr Gly Arg
            180                 185                 190
Pro Ile Ile Ile Lys Phe Leu Gly Cys Tyr His Gly His Ala Asp Thr
        195                 200                 205
Phe Leu Gln Glu Lys Pro Phe Ser His Thr Ser Leu Asp Thr Leu Asp
    210                 215                 220
Leu Ala His Pro Leu Thr Leu Ser Leu Pro Phe Asn Asp Phe Pro Leu
225                 230                 235                 240
Phe Gln Thr Val Met Asn Ser Leu Gly His Lys Val Ala Gly Val Ile
                245                 250                 255
Phe Glu Pro Val Cys Ala Asn Met Gly Val Ile Leu Pro Val Pro Asp
            260                 265                 270
Phe Ile Glu Gly Val Ile Gln Thr Cys Gln Gln Thr Gly Ser Phe Ser
        275                 280                 285
Ile Met Asp Glu Val Val Thr Gly Phe Arg Val Ala Gln Gly Gly Ala
    290                 295                 300
Ala Ala Leu Tyr His Val Lys Pro Asp Ile Leu Val Phe Gly Lys Ile
305                 310                 315                 320
```

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```
Leu Gly Gly Gly Leu Pro Ala Ser Ala Val Val Ala Pro Lys Asp Ile
                325                 330                 335
Met Asp His Leu Ala Pro Glu Glu Lys Ser Ser Lys Leu Glu His Phe
            340                 345                 350
Gln Glu Ile Leu Trp Leu
        355
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<213>Chlamydia trachomatis
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Met Arg Tyr Asp Pro Gly Leu Ile Glu Glu Lys Trp Gln Lys Phe Trp
  1               5                  10                  15
Lys Asn Glu Gln Val Phe Lys Ala Glu Glu Asp Glu Thr Lys Thr Lys
            20                  25                  30
Tyr Tyr Val Leu Asp Met Phe Pro Tyr Pro Ser Gly Ala Gly Leu His
        35                  40                  45
Val Gly His Leu Ile Gly Tyr Thr Ala Thr Asp Ile Val Ala Arg Cys
    50                  55                  60
Lys Arg Ala Gln Gly Phe Ser Val Leu His Pro Met Gly Trp Asp Ser
65                  70                  75                  80
Phe Gly Leu Pro Ala Glu Gln Tyr Ala Ile Arg Thr Gly Thr His Pro
                85                  90                  95
Arg Glu Thr Thr Glu Lys Asn Ile Ala Asn Phe Lys Lys Gln Leu Thr
            100                 105                 110
Ala Met Gly Phe Ser Tyr Asp Glu Ser Arg Glu Phe Ala Thr Ser Asp
        115                 120                 125
Pro Glu Tyr Tyr Lys Trp Thr Gln Lys Leu Phe Leu Ile Leu Tyr Glu
    130                 135                 140
Lys Gly Leu Ala Tyr Met Ala Asp Met Ala Val Asn Tyr Cys Pro Glu
145                 150                 155                 160
Leu Gly Thr Val Leu Ser Asn Glu Glu Ile Glu Asn Gly Phe Ser Val
                165                 170                 175
Asp Gly Gly Tyr Pro Val Glu Arg Arg Met Leu Arg Gln Trp Val Leu
            180                 185                 190
Arg Ile Thr Ala Phe Ala Asp Gln Leu Leu Glu Gly Leu Asp Glu Leu
        195                 200                 205
Asp Trp Pro Glu Ser Val Lys Gln Leu Gln Lys Asn Trp Ile Gly Lys
    210                 215                 220
Ser Ser Gly Ala Ser Val Asn Phe Ala Thr Glu His Gly Ala Ile Glu
225                 230                 235                 240
Val Phe Thr Thr Arg Pro Asp Thr Leu Ile Gly Val Ser Phe Leu Ala
                245                 250                 255
Leu Ala Pro Glu His Pro Leu Val Asp Leu Leu Thr Ser Asp Glu Gln
            260                 265                 270
Lys Ala Val Val Ala Gln Tyr Ile Lys Glu Thr Gln Ser Lys Ser Glu
        275                 280                 285
Arg Asp Arg Ile Ser Glu Met Lys Thr Lys Ser Gly Val Phe Thr Gly
    290                 295                 300
Ser Tyr Ala Lys His Pro Val Thr His Glu Leu Ile Pro Ile Trp Ile
305                 310                 315                 320
Ala Asp Tyr Val Leu Met Gly Phe Gly Ser Gly Ala Val Met Gly Val
                325                 330                 335
Pro Ala His Asp Glu Arg Asp Leu Leu Phe Ala Glu Gln Phe Asn Leu
            340                 345                 350
Pro Val Val Ser Val Leu Asn Glu Glu Gly Val Cys Ile Asn Ser Cys
        355                 360                 365
Cys Glu Gly Phe His Leu Asp Gly Leu Ser Gly Glu Glu Ala Lys Gln
    370                 375                 380
Tyr Val Ile Asn Phe Leu Glu Glu Asn His Leu Gly Ala Ala Lys Ile
385                 390                 395                 400
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Sequence Listing

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Ala Tyr Lys Leu Arg Asp Trp Leu Phe Ser Arg Gln Arg Tyr Trp Gly
                405                 410                 415
Glu Pro Ile Pro Ile Ile His Phe Glu Asp Gly Ser Cys Arg Pro Leu
            420                 425                 430
Arg Asp Asp Glu Leu Pro Leu Leu Pro Pro Glu Ile Gln Asp Tyr Arg
        435                 440                 445
Pro Glu Gly Val Gly Gln Gly Pro Leu Ala Lys Val Arg Glu Trp Val
    450                 455                 460
Gln Val Phe Asp Thr Glu Thr Gln Arg Ala Gly Lys Arg Glu Thr His
465                 470                 475                 480
Thr Met Pro Gln Trp Ala Gly Ser Cys Trp Tyr Tyr Leu Arg Phe Cys
                485                 490                 495
Asp Ala His Asn Ser Ala Ala Pro Trp Ala Lys Glu Lys Glu Gln Tyr
            500                 505                 510
Trp Met Pro Val Asp Leu Tyr Ile Gly Gly Ala Glu His Ala Val Leu
        515                 520                 525
His Leu Leu Tyr Ala Arg Phe Trp His Gln Val Phe Tyr Glu Ala Gly
    530                 535                 540
Ile Val Ser Thr Pro Glu Pro Phe Lys Lys Leu Val Asn Gln Gly Leu
545                 550                 555                 560
Val Leu Ala Thr Ser Tyr Arg Ile Pro Gly Lys Gly Tyr Ile Tyr Pro
                565                 570                 575
Glu Thr Ala Lys Glu Glu Asn Gly Lys Trp Val Ala Pro Ser Gly Glu
            580                 585                 590
Glu Leu Asp Val Arg Gln Glu Lys Met Ser Lys Ser Lys Leu Asn Gly
        595                 600                 605
Val Asp Pro Gln Ile Leu Ile Asp Glu Phe Gly Leu Thr Leu Phe Gly
    610                 615                 620
Cys Thr Gln Cys Phe Gln Gly Leu
625                 630
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<213>Chlamydia trachomatis
<400>241
Ile Trp Thr Asp Ala Val Arg Met Tyr Ala Met Phe Ser Gly Pro Leu
  1                 5                  10                  15
Asp Lys Asn Lys Leu Trp Ser Asn Gln Gly Val Ala Gly Cys Arg Arg
            20                  25                  30
Phe Leu Asn Arg Phe Tyr Glu Met Val Ser Ser Asp Arg Val Lys Glu
        35                  40                  45
Asp Asn Asn Phe Glu Gly Leu Ser Leu Ala His Lys Leu Val Gln Arg
    50                  55                  60
Val Thr Asp Ala Ile Glu Lys Leu Ser Leu Asn Thr Ile Pro Ser Ser
65                  70                  75                  80
Phe Met Glu Phe Ile Asn Asp Phe Val Lys Leu Ala Val Tyr Pro Lys
                85                  90                  95
Ser Ala Val Glu Met Ala Val Arg Ala Leu Ala Pro Ile Ala Pro His
            100                 105                 110
Ile Ser Glu Glu Leu Trp Val Leu Leu Gly Asn Ser Pro Gly Val Gln
        115                 120                 125
Lys Ser Gly Trp Pro Ser Val Leu Pro Glu Tyr Leu Glu Glu Gln Thr
    130                 135                 140
Val Thr Ile Val Val Gln Val Asn Gly Lys Leu Arg Ala Arg Leu Asp
145                 150                 155                 160
Ile Met Lys Asp Ala Ser Lys Glu Glu Val Leu Ala Leu Ala Arg Glu
                165                 170                 175
Ser Ala Ser Lys Tyr Leu Glu Gly Cys Glu Val Lys Lys Ala Ile Phe
            180                 185                 190
Val Pro Ala Arg Leu Val Asn Phe Val Val
        195                 200
```

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<210>242
<211>431
<212>PRT
<213>Chlamydia trachomatis
<400>242

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Met Ile Arg Arg Trp Leu Thr Ser Arg Leu Tyr Asp Ala Phe Leu Val
  1               5                  10                  15
Cys Ala Phe Phe Val Ser Ala Pro Arg Ile Phe Tyr Lys Val Phe Phe
            20                  25                  30
His Gly Lys Tyr Ile Asp Ser Trp Lys Ile Arg Phe Gly Val Gln Lys
        35                  40                  45
Pro Phe Val Lys Gly Glu Gly Pro Leu Val Trp Phe His Gly Ala Ser
    50                  55                  60
Val Gly Glu Val Ser Leu Leu Ala Pro Leu Leu Asn Arg Trp Arg Glu
65                  70                  75                  80
Glu Phe Pro Glu Trp Arg Phe Val Val Thr Thr Cys Ser Glu Ala Gly
                85                  90                  95
Val His Thr Ala Arg Arg Leu Tyr Glu Ser Leu Gly Ala Thr Val Phe
            100                 105                 110
Val Leu Pro Leu Asp Leu Ser Cys Ile Ile Lys Ser Val Val Arg Lys
        115                 120                 125
Leu Ala Pro Asp Ile Val Ile Phe Ser Glu Gly Asp Cys Trp Leu His
    130                 135                 140
Phe Leu Thr Glu Ser Lys Arg Leu Gly Ala Lys Ala Phe Leu Ile Asn
145                 150                 155                 160
Gly Lys Leu Ser Glu His Ser Cys Lys Arg Phe Ser Phe Leu Lys Arg
                165                 170                 175
Leu Gly Arg Asn Tyr Phe Ala Pro Leu Asp Leu Leu Ile Leu Gln Asp
            180                 185                 190
Glu Leu Tyr Lys Gln Arg Phe Met Gln Ile Gly Ile Ser Ser Asp Lys
        195                 200                 205
Ile His Val Thr Gly Asn Met Lys Thr Phe Ile Glu Ser Ser Leu Ala
    210                 215                 220
Thr Asn Arg Arg Asp Phe Trp Arg Ala Lys Leu Gln Ile Ser Ser Gln
225                 230                 235                 240
Asp Arg Leu Ile Val Leu Gly Ser Met His Pro Lys Asp Val Glu Val
                245                 250                 255
Trp Ala Glu Val Val Ser His Phe His Asn Ser Ser Thr Lys Ile Leu
            260                 265                 270
Trp Val Pro Arg His Leu Glu Lys Leu Lys Glu His Ala Lys Leu Leu
        275                 280                 285
Glu Lys Ala Gly Ile Leu Phe Gly Leu Trp Ser Gln Gly Ala Ser Phe
    290                 295                 300
Arg Gln Tyr Asn Ser Leu Ile Met Asp Ala Met Gly Val Leu Lys Asp
305                 310                 315                 320
Ile Tyr Ser Ala Ala Asp Ile Ala Phe Val Gly Gly Thr Phe Asp Pro
                325                 330                 335
Ser Val Gly Gly His Asn Leu Leu Glu Pro Leu Gln Lys Glu Ala Pro
            340                 345                 350
Leu Met Phe Gly Pro Tyr Ile Tyr Ser Gln Ser Val Leu Ala Glu Arg
        355                 360                 365
Leu Arg Glu Lys Glu Ala Gly Leu Ser Val Asn Lys Glu Thr Leu Leu
    370                 375                 380
Asp Val Val Thr Asp Leu Leu Gln Asn Glu Lys Asn Arg Gln Ala Tyr
385                 390                 395                 400
Ile Glu Lys Gly Lys Ser Phe Leu Lys Gln Glu Glu Asn Ser Phe Gln
                405                 410                 415
Gln Thr Trp Glu Ile Leu Lys Ser Gln Ile Thr Cys Met Lys Ile
            420                 425                 430
```

<210>243
<211>570

<212>PRT
<213>Chlamydia trachomatis
<400>243

```
Leu His Ile Leu Arg Ser Phe Ser Arg Pro Cys Arg Leu Ala Lys Thr
  1               5                  10                  15
Ser Ile Ile Gly His Thr Met Glu Leu Leu Ser Val Asn Lys Ser Tyr
            20                  25                  30
Phe Glu Leu Gln Arg Leu His Tyr Arg Pro Asp Thr Leu Ser Leu Leu
        35                  40                  45
Asn Ser Leu Cys Ser Met His Ile Gln Glu Lys Pro Ser Ser Glu Pro
    50                  55                  60
Ala Ser Asp Leu Leu Ala Lys His Ile Pro His Leu Cys Ala Leu Pro
65                  70                  75                  80
Asp Leu Thr Leu Gln Lys Asp Ala Pro Ser Ser Ser Glu Pro Leu Arg
                85                  90                  95
Ile Gly Val Leu Leu Ser Gly Gly Gln Ala Pro Gly Gly His Asn Val
            100                 105                 110
Val Ile Gly Leu Phe Glu Gly Leu Arg Ala Phe Asn Lys Glu Thr Lys
        115                 120                 125
Leu Phe Gly Phe Ile Lys Gly Pro Leu Gly Leu Ile Arg Gly Leu Tyr
    130                 135                 140
Lys Asp Leu Asp Ile Ser Val Ile Tyr Asp Tyr Tyr Asn Ala Gly Gly
145                 150                 155                 160
Phe Asp Met Leu Ser Ser Ser Arg Glu Lys Ile Lys Thr Lys Glu Gln
                165                 170                 175
Lys Ser Ala Ile Leu Ala Thr Val Lys Lys Met Lys Leu His Gly Leu
            180                 185                 190
Leu Ile Val Gly Gly Asp Asn Ser Asn Thr Asp Thr Ala Met Leu Ala
        195                 200                 205
Glu Tyr Phe Ile Glu His Asn Cys Pro Thr Ala Val Ile Gly Val Pro
    210                 215                 220
Lys Thr Ile Asp Gly Asp Leu Lys Asn Ala Trp Ile Glu Thr Pro Leu
225                 230                 235                 240
Gly Phe His Thr Ser Cys Arg Thr Tyr Ser Glu Met Ile Gly Asn Leu
                245                 250                 255
Glu Lys Asp Val Leu Ser Thr Arg Lys Tyr His His Phe Val Lys Leu
            260                 265                 270
Met Gly Glu Gln Ala Ser His Ser Thr Leu Glu Cys Gly Leu Gln Thr
        275                 280                 285
Leu Pro Asn Ile Thr Leu Ile Gly Glu Glu Val Ala Val Gln His Ala
    290                 295                 300
Ser Leu Gln Ser Leu Ser Leu Ser Ile Ala Gln Gly Leu Ile Glu Arg
305                 310                 315                 320
Phe His Arg Gly Lys Asp Tyr Ser Thr Ile Leu Ile Pro Glu Gly Leu
                325                 330                 335
Ile Lys Gln Ile Pro Asp Thr Lys Arg Leu Ile Gln Glu Leu Asn Thr
            340                 345                 350
Leu Ile Ala Glu Glu Gln Phe Ser Val His Asn Leu Asp Gln Gln Leu
        355                 360                 365
Ser Pro Met Ala Ile Glu Thr Phe Ser Ser Leu Pro Glu Asn Ile Arg
    370                 375                 380
Asp Gln Leu Leu Leu Asp Arg Asp Ser Tyr Gly Asn Ile Arg Val Ser
385                 390                 395                 400
Lys Ile Ala Ile Glu Glu Leu Leu Ala Ser Leu Val Ser Lys Glu Ile
                405                 410                 415
Ser Lys Leu Glu Pro Thr Met Ser Phe Ser Pro Val Thr His Phe Leu
            420                 425                 430
Gly Tyr Glu Ser Arg Ala Ser Phe Pro Ser Asn Phe Asp Ser Asn Tyr
        435                 440                 445
Gly Leu Ala Leu Gly Ile Ala Ala Ser Leu Phe Leu Val Arg Gly Lys
    450                 455                 460
```

```
Thr Gly Tyr Met Val Thr Ile Gly Asn Leu Ala Glu Thr Tyr Thr Glu
465                 470                 475                 480
Trp Thr Ile Ala Ala Thr Pro Leu Tyr Lys Met Met His Leu Glu Lys
                485                 490                 495
Arg Phe Asn Gln Glu Thr Pro Val Ile Lys Thr Asp Ser Val Ser Pro
            500                 505                 510
Asp Ala Pro Met Ala Lys Tyr Leu His Lys Met Lys Glu Ile Cys Leu
        515                 520                 525
Leu Glu Asp Ser Tyr Arg Phe Pro Gly Pro Leu Gln Tyr Phe Glu Glu
    530                 535                 540
Gln Ala Leu Val Asp Gln Arg Pro Leu Thr Leu Leu Trp Glu Lys Gly
545                 550                 555                 560
Lys Leu Ser Glu Asn Asn Ala Thr Lys Phe
                565                 570
```

<210>244
<211>302
<212>PRT
<213>Chlamydia trachomatis
<400>244

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Met Ala Lys Thr Leu Phe Tyr Leu Phe Arg Asn Pro Arg Ser Gly Leu
  1               5                  10                  15
Leu Thr Ile Ser Met Asp Ile Thr Lys Glu Leu Pro Phe Ile Met Met
             20                  25                  30
Gln Gln Pro His Tyr Phe Pro His Ser Lys Lys Ile Phe Glu Ile Pro
         35                  40                  45
Leu Leu Asp Asn Val Thr Ser Leu Gly Val Leu His Ile Pro His Ser
     50                  55                  60
Gln Glu Lys Thr Phe Pro Leu Val Ile Val Leu His Gly Leu Ala Ser
 65                  70                  75                  80
Ser Lys Ile Gly Thr Lys Arg Ser Tyr Leu His Leu Ala Asn Gln Leu
                85                  90                  95
Val Gln Glu Gly Ile Gly Val Leu Arg Val Asp Leu Pro Gly His Gly
            100                 105                 110
Asp Ser Glu Gly Phe Ile His Glu Phe Ser Leu Thr Asp Tyr Ile Gln
        115                 120                 125
Ala Ser Gln Lys Ile Ile Gln Phe Gly Leu Ser Leu Pro Gln Ala Asn
    130                 135                 140
His Ser Val Ala Leu Phe Gly Ser Ser Leu Gly Gly Ser Leu Ser Leu
145                 150                 155                 160
Leu Asn Leu Pro Tyr Phe Pro Glu Ile Gln His Ala Ala Ile Trp Thr
                165                 170                 175
Pro Thr Ile Gln Gly Ala Leu Trp Leu Glu Asp Thr Met Gln Ser Met
            180                 185                 190
Ser Pro Ser Leu Gln Leu Pro Pro Asp Asn Phe Ser Tyr Gln Gly Ile
        195                 200                 205
Pro Leu Gly Lys Lys Phe Cys Ser Gln Phe Ile Glu Leu Asp Thr Val
    210                 215                 220
Asp Ala Leu Ser Lys Ile Thr Gln Glu Val Ser Ile Leu Tyr Leu Gln
225                 230                 235                 240
Gly Glu Asp Asp Ala Val Val Ser Leu Arg His Gln Ala Leu Phe Ala
                245                 250                 255
Lys Thr Phe Thr Gly Lys Ala Ser Tyr Arg Thr Tyr Pro Lys Met Thr
            260                 265                 270
His Gln Leu Cys Ile Tyr Ser Glu Ala Phe Gln Asp Leu Val Asp Trp
        275                 280                 285
Leu Lys His Gln Leu Leu Gly Thr Pro Trp Ser Tyr Ser Leu
    290                 295                 300
```

<210>245
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<212>PRT
<213>Chlamydia trachomatis

<400>245

```
Ala Asn Val Phe Glu Gln Lys Leu Met Ser Ser Asn Lys His Ala Ser
 1               5                  10                  15
Leu Cys Gln Lys Thr Pro Ser Leu Cys Arg Glu Leu Gln Lys Ala Pro
            20                  25                  30
Ala Leu Leu Leu Thr Glu Asp Ile Arg Phe Lys Ala Leu Leu Asn Glu
        35                  40                  45
Arg Ile Asp Ser Val Ala Glu Leu Phe Pro Cys Thr Tyr Asn Ser Pro
    50                  55                  60
Tyr Tyr Lys Phe Ile Ser Lys Ser Asp Leu Ser Ala Glu Thr Phe Pro
65                  70                  75                  80
Leu Lys Val Gly Val Met Leu Ser Gly Gly Pro Ala Pro Gly Gly His
                85                  90                  95
Asn Val Ile Leu Gly Leu Leu His Ser Ile Lys Lys Leu His Pro Asp
            100                 105                 110
Ser Gln Leu Leu Gly Phe Ile Arg Asn Gly Glu Gly Leu Leu Asn Asn
        115                 120                 125
Asn Thr Val Glu Ile Thr Asp Glu Phe Ile Glu Glu Phe Arg Asn Ser
    130                 135                 140
Gly Gly Phe Asn Cys Ile Gly Thr Gly Arg Thr Asn Ile Ile Thr Glu
145                 150                 155                 160
Glu Asn Lys Ala Arg Cys Leu Gln Thr Ala Asn Glu Leu Asp Leu Asp
                165                 170                 175
Gly Leu Val Ile Ile Gly Gly Asp Gly Ser Asn Thr Ala Thr Ala Ile
            180                 185                 190
Leu Ala Glu Tyr Phe Ala Lys His Gln Ala Lys Thr Val Leu Val Gly
        195                 200                 205
Val Pro Lys Thr Ile Asp Gly Asp Leu Gln His Leu Phe Leu Asp Leu
    210                 215                 220
Thr Phe Gly Phe Asp Thr Ala Thr Lys Phe Tyr Ser Ser Ile Ile Ser
225                 230                 235                 240
Asn Ile Ser Arg Asp Ala Leu Ser Cys Lys Gly His Tyr His Phe Ile
                245                 250                 255
Lys Leu Met Gly Arg Ser Ser Ser His Ile Thr Leu Glu Cys Ala Leu
            260                 265                 270
Gln Thr His Pro Asn Ile Ala Leu Ile Gly Glu Glu Ile Ala Glu Lys
        275                 280                 285
Ser Ile Ser Leu Glu Thr Leu Ile His Asp Ile Cys Glu Ile Ile Ala
    290                 295                 300
Asp Arg Ala Ala Met Gly Lys Tyr His Gly Val Ile Leu Ile Pro Glu
305                 310                 315                 320
Gly Val Ile Glu Phe Ile Pro Glu Ile Gln Ser Leu Val Lys Glu Ile
                325                 330                 335
Glu Ser Ile Pro Glu Gln Glu Asn Leu Tyr Gln Ala Leu Ser Leu Ser
            340                 345                 350
Ser Gln Gln Leu Leu Cys Gln Phe Pro Glu Asp Ile Cys His Gln Leu
        355                 360                 365
Leu Tyr Asn Arg Asp Ala His Gly Asn Val Tyr Val Ser Lys Ile Ser
    370                 375                 380
Val Asp Lys Leu Leu Ile His Leu Val Arg Gln His Leu Glu Thr His
385                 390                 395                 400
Phe Arg Gln Val Pro Phe Asn Xaa Ser Ala His Phe Leu Gly Tyr Glu
                405                 410                 415
Gly Arg Ser Gly Thr Pro Thr His Phe Asp Asn Val Tyr Ser Tyr Asn
            420                 425                 430
Leu Gly Tyr Gly Ala Gly Val Leu Val Phe Asn Arg Cys Asn Gly Tyr
        435                 440                 445
Leu Ser Thr Ile Glu Gly Leu Thr Ser Pro Ile Glu Lys Trp Arg Leu
    450                 455                 460
Arg Ala Leu Pro Ile Val Arg Met Leu Thr Thr Lys Gln Gly Lys Asp
465                 470                 475                 480
```

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```
Ser Lys His Tyr Pro Leu Ile Lys Lys Arg Leu Val Asp Ile Ala Ser
                485                 490                 495
Pro Val Phe Asn Lys Phe Ser Leu Tyr Arg Lys Ile Trp Ala Leu Glu
            500                 505                 510
Asp Ser Tyr Arg Phe Val Gly Pro Leu Gln Ile His Ser Pro Glu Asp
        515                 520                 525
Ala His Ser Asp Asp Phe Pro Pro Leu Ile Leu Phe Leu Asn His Asn
    530                 535                 540
Glu Trp Gln Lys Arg Cys Ser Ile Cys Leu Glu Ile Pro Asp Gln Asp
545                 550                 555                 560
Tyr
```

<210>246
<211>473
<212>PRT
<213>Chlamydia trachomatis
<400>246

```
Gly Ala Met Asn Lys His Lys Arg Phe Leu Ser Leu Val Leu Leu Thr
  1               5                  10                  15
Phe Ile Leu Leu Gly Ile Trp Phe Cys Pro His Ser Asp Leu Ile Asp
             20                  25                  30
Ser Lys Ala Trp His Leu Phe Ala Ile Phe Thr Thr Thr Ile Ile Gly
         35                  40                  45
Ile Ile Val Gln Pro Ala Pro Met Gly Ala Ile Val Ile Met Gly Ile
     50                  55                  60
Ser Leu Leu Leu Val Thr Lys Thr Leu Thr Leu Asp Gln Ala Leu Ser
 65                  70                  75                  80
Gly Phe His Ser Pro Ile Ala Trp Leu Val Phe Leu Ser Phe Ser Ile
                85                  90                  95
Ala Lys Gly Val Ile Lys Thr Gly Leu Gly Glu Arg Val Ala Tyr Phe
            100                 105                 110
Phe Val Lys Ile Leu Gly Lys Ser Pro Leu Gly Leu Ser Tyr Gly Leu
        115                 120                 125
Val Leu Thr Asp Phe Leu Leu Ala Pro Ala Ile Pro Ser Leu Thr Ala
    130                 135                 140
Arg Ala Gly Gly Ile Leu Phe Pro Val Val Met Gly Leu Ser Glu Ser
145                 150                 155                 160
Phe Gly Ser Ser Val Glu Lys Gly Thr Glu Lys Leu Leu Gly Ser Phe
                165                 170                 175
Leu Ile Lys Val Ala Tyr Gln Ser Ser Val Ile Thr Ser Ala Met Phe
            180                 185                 190
Leu Thr Ala Met Ala Gly Asn Pro Ile Ile Ser Ala Leu Ala Ser His
        195                 200                 205
Ser Gly Val Thr Leu Thr Trp Ala Ile Trp Ala Lys Ala Ala Ile Leu
    210                 215                 220
Pro Gly Ile Ile Ser Leu Ala Cys Met Pro Phe Val Leu Phe Lys Leu
225                 230                 235                 240
Phe Pro Pro Gln Ile Thr Ser Cys Glu Glu Ala Val Ala Thr Ala Lys
                245                 250                 255
Thr Arg Leu Lys Glu Met Gly Pro Leu Asn Gln Gly Glu Arg Ile Ile
            260                 265                 270
Leu Leu Ile Phe Ser Leu Leu Ile Ser Leu Trp Thr Phe Gly Asp Ser
        275                 280                 285
Ile Gly Ile Ser Ala Thr Thr Thr Thr Phe Ile Gly Leu Ser Leu Leu
    290                 295                 300
Ile Leu Thr Asn Ile Leu Asp Trp Gln Lys Asp Val Leu Ser Asn Thr
305                 310                 315                 320
Thr Ala Trp Glu Thr Phe Val Trp Phe Gly Ala Leu Ile Met Met Ala
                325                 330                 335
Ser Phe Leu Ser Ala Phe Gly Phe Ile His Phe Val Gly Asp Ser Val
            340                 345                 350
```

Search Report

```
Ile Gly Ser Val Gln Gly Leu Ser Trp Lys Ile Gly Phe Pro Ile Leu
        355                 360                 365
Phe Leu Ile Tyr Phe Tyr Ser His Tyr Leu Phe Ala Ser Asn Thr Ala
    370                 375                 380
His Ile Ala Ala Met Tyr Pro Ile Phe Leu Thr Val Ser Ile Ser Leu
385                 390                 395                 400
Gly Ala Asn Pro Met Phe Ala Ala Leu Ala Leu Ala Phe Ala Ser Asn
                405                 410                 415
Leu Phe Gly Gly Leu Thr His Tyr Gly Ser Gly Pro Ala Pro Leu Tyr
            420                 425                 430
Phe Gly Ser His Phe Val Ser Val Gln Glu Trp Trp Arg Ser Gly Phe
        435                 440                 445
Ile Leu Ser Ile Val Asn Leu Thr Ile Trp Leu Gly Leu Gly Ser Trp
    450                 455                 460
Trp Trp Tyr Cys Leu Gly Leu Ile Arg
465                 470
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<211>318
<212>PRT
<213>Chlamydia trachomatis
<400>247
Cys Gly Leu Asp Ser Pro Tyr Leu Leu Arg Leu Arg Ala Pro Trp Ser
  1               5                  10                  15
Leu Leu Ala Thr Ala Cys Ser Phe Ser Glu Ser Pro Ser Phe Arg Glu
            20                  25                  30
Arg Leu Glu Gly Leu His Ser Tyr Arg Val Val Asp Arg Arg Phe Leu
        35                  40                  45
Ala Cys Tyr Asp Gln Glu Thr Ile Asp Tyr Ser Gln Ile Phe Arg Thr
    50                  55                  60
Gly Val Thr Leu Thr Met Glu Ile Ser His Ile Leu Glu Asp Leu Val
65                  70                  75                  80
Tyr Asp Asn Gly Val Leu Pro Arg Glu Ala Ile Glu Ala Ala Ile Val
                85                  90                  95
Lys His His Gln Ile Thr Pro Tyr Leu Leu Lys Ile Leu Glu Glu Gly
            100                 105                 110
Ile Asp His Val Ser Asp Ile Ile Asp Asp Asp Cys Tyr Gln Gly His
        115                 120                 125
Leu Tyr Ala Met Tyr Leu Leu Ala Gln Phe Arg Glu Thr Arg Ala Leu
    130                 135                 140
Pro Leu Ile Ile Lys Leu Phe Ser Phe Glu Gln Asp Ile Pro His Ala
145                 150                 155                 160
Ile Ala Gly Asp Val Leu Thr Glu Asp Leu Ser Arg Ile Leu Ala Ser
                165                 170                 175
Val Cys Asp Asp Val Ala Leu Ile Gln Glu Leu Ile Glu Thr Pro His
            180                 185                 190
Val Asn Pro Tyr Val Gln Ala Ala Ala Ile Ser Ser Leu Val Ala Leu
        195                 200                 205
Val Gly Val His Lys Leu Ser Arg Glu Thr Ala Ile Arg Tyr Phe Gly
    210                 215                 220
Glu Leu Leu Asn Tyr Arg Leu Glu Lys Lys Pro Ser Phe Ala Trp Asp
225                 230                 235                 240
Ser Leu Val Ala Ser Ile Cys Ala Leu Tyr Pro Lys Glu Leu Phe Tyr
                245                 250                 255
Pro Ile Ser Lys Ala Phe Ser Ala Gly Leu Ile Asp Thr Ser Phe Ile
            260                 265                 270
Ser Met Glu Asp Val Glu Thr Ile Ile His Glu Glu Ser Ile Asp Ser
        275                 280                 285
Cys Leu Lys Glu Val Phe Ser Ser Thr Asp Leu Ile Asn Asp Thr Leu
    290                 295                 300
Glu Glu Met Glu Lys Trp Leu Glu Arg Phe Pro Phe Glu Ser
305                 310                 315
```

<210>248
<211>249
<212>PRT
<213>Chlamydia trachomatis
<400>248

```
Leu Ala Met Ser Thr Leu Val Ser Ile Lys Asp Leu Ser Leu Thr Ile
  1               5                  10                  15
Arg Lys Gln Pro Ile Leu Arg Asn Val His Leu Glu Ile Cys Arg Gly
            20                  25                  30
Glu Cys Leu Thr Ile Val Gly Ala Ser Gly Ser Gly Lys Thr Ser Leu
        35                  40                  45
Ala Leu Ala Ile Leu Gly Leu Leu Pro Pro Asp Ala Gln Asp Ser Ile
    50                  55                  60
Asp Phe His Leu Pro Pro Lys Thr Pro Arg Thr Lys Ala Val Gln Met
65                  70                  75                  80
Ile Trp Gln Asp Val Tyr Ser Ser Leu Asn Pro Met Met Thr Ile Gln
                85                  90                  95
Glu Ile Ile Ala Glu Pro Leu His Ile Met Gly Gly Leu Ser Lys Ser
            100                 105                 110
Xaa Gln Gln Glu Glu Ile Ala His Ala Leu Lys Leu Val His Leu Pro
        115                 120                 125
Lys Ser Phe Leu Ser Leu Arg Pro Ile Lys Leu Ser Gly Gly Gln Arg
    130                 135                 140
Gln Arg Ile Ala Ile Ala Lys Ala Leu Val Cys Lys Pro Glu Leu Ile
145                 150                 155                 160
Ile Cys Asp Glu Pro Leu Ser Ala Leu Asp Thr Met Asn Gln Lys Leu
                165                 170                 175
Ile Leu Asp Leu Phe Gln Thr Ile Lys Asn Gln Tyr Asn Asn Ala Phe
            180                 185                 190
Leu Phe Ile Thr His Asp Met Ser Ala Ala Tyr Thr Leu Ala Asp Lys
        195                 200                 205
Ile Ala Val Met Asp Arg Gly Tyr Leu Val Glu Ile Ala Ser Lys Gln
    210                 215                 220
Glu Ile Phe Ser Ser Pro Lys His Ile Lys Thr Arg Glu Leu Leu Asp
225                 230                 235                 240
Ala Ile Pro Ala Phe Thr Phe Ser Phe
                245
```

<210>249
<211>281
<212>PRT
<213>Chlamydia trachomatis
<400>249

```
Arg Lys Ile Pro Leu Ser Glu Asp Leu Leu Lys Ile Asp Asn Leu Val
  1               5                  10                  15
Val Ser Val Lys Asn Ser Asn Gln Arg Leu Val Asn His Leu Ser Leu
            20                  25                  30
Thr Ile Lys Arg Cys Gln Ser Met Ala Leu Val Gly Glu Asn Gly Ser
        35                  40                  45
Gly Lys Thr Thr Val Ser Lys Ala Val Leu Gly Phe Leu Pro Asp Asn
    50                  55                  60
Cys Tyr Ile Gln Ser Gly Arg Ile Leu Tyr Ser Ser Thr Asp Ile Thr
65                  70                  75                  80
Arg Leu Ser Arg Arg Gln Leu Gln Thr Ile Arg Gly Lys Lys Ile Ala
                85                  90                  95
Thr Ile Phe Gln Asn Ala Met Gly Thr Leu Thr Pro Ser Met Arg Val
            100                 105                 110
Gly Ala Gln Ile Val Glu Thr Leu Arg His His Phe Asp Met Ser Lys
        115                 120                 125
Glu Glu Ala Phe Ser Lys Ala Arg Glu Leu Leu Glu Ser Val His Ile
    130                 135                 140
Glu Ser Pro Asp Arg Cys Leu Gln Leu Tyr Pro Phe Glu Leu Ser Gly
```

```
145                 150                 155                 160
Gly Met Cys Gln Arg Val Ser Ile Ala Ile Ala Leu Ala Thr Asn Pro
                165                 170                 175
Glu Leu Ile Ile Ala Asp Glu Pro Ser Thr Ala Leu Asp Ser Ile Ser
            180                 185                 190
Gln Ala Gln Val Leu Arg Val Leu Thr Gln Ile His Gln Asn His Ser
        195                 200                 205
Thr Ala Leu Leu Leu Ile Thr His Asn Leu Ala Leu Val Ser Glu Leu
    210                 215                 220
Cys Glu Glu Met Ala Ile Ile Arg Tyr Gly Glu Ile Val Glu Gln Gly
225                 230                 235                 240
Pro Val Gln Glu Leu Leu His Ser Pro Ser His Pro Tyr Thr Gln Gln
                245                 250                 255
Leu Ile Arg Ala Ile Pro Arg Ile Pro Ser Pro Ser Tyr Leu Ser Pro
            260                 265                 270
Thr Glu Pro Leu Ala Thr Thr Ala Tyr
        275                 280
<210>250
<211>284
<212>PRT
<213>Chlamydia trachomatis
<400>250
Asn Lys Leu Met Phe Arg Ser Ser Ser Ser His Thr Trp Arg Tyr Ile
  1                 5                  10                  15
Arg Thr Asn Lys Met Leu Val Leu Gly Cys Leu Thr Leu Ala Val Leu
             20                  25                  30
Val Leu Ala Ala Thr Phe Leu Pro Tyr Leu Tyr Pro Asp Tyr Glu Arg
         35                  40                  45
Thr Phe Pro Glu His Ala Leu Gln Ser Pro Ser Lys Ala Phe Pro Phe
     50                  55                  60
Gly Thr Asp Asn Leu Gly Arg Cys Met Leu Ala Arg Thr Leu Gln Gly
 65                  70                  75                  80
Ile Arg Leu Ser Leu Leu Ile Ala Val Ser Ala Thr Ile Ile Asp Val
                85                  90                  95
Cys Leu Gly Leu Leu Trp Ser Thr Leu Ala Leu Ala Ser Gly Lys Lys
            100                 105                 110
Val Ala Asp Ile Met Ser Arg Ile Thr Glu Ile Leu Phe Ser Ile Pro
        115                 120                 125
Arg Ile Pro Val Ile Ile Leu Leu Leu Val Ile Phe Asn His Gly Ile
    130                 135                 140
Leu Pro Leu Ile Leu Ala Met Thr Ile Thr Gly Trp Ile Pro Ile Ala
145                 150                 155                 160
Arg Ile Ile Tyr Gly Gln Phe Leu Leu Leu Glu Asn Lys Glu Phe Val
                165                 170                 175
Leu Ser Ala Arg Ala Leu Gln Ala Ser Thr Phe His Ile Leu Arg Lys
            180                 185                 190
His Leu Leu Pro Asn Ser Leu Gly Pro Ile Ile Ser Thr Leu Ile Phe
        195                 200                 205
Thr Ile Pro Asn Ala Val Tyr Thr Glu Ala Phe Ile Ser Phe Leu Gly
    210                 215                 220
Leu Gly Xaa Gln Pro Pro Tyr Ala Ser Leu Gly Thr Leu Val Lys Glu
225                 230                 235                 240
Gly Ile His Ser Leu Ala Tyr His Pro Trp Leu Phe Phe Ile Pro Ser
                245                 250                 255
Phe Phe Met Ile Ile Val Ser Val Ser Phe Asn Cys Ile Gly Glu Gly
            260                 265                 270
Leu Gln Thr Lys Leu Leu Glu Glu Asn Thr Leu Val
        275                 280
<210>251
<211>206
<212>PRT
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<213>Chlamydia trachomatis
<400>251

```
Met Leu Ser Tyr Ile Lys Arg Arg Leu Leu Phe Asn Leu Leu Ser Leu
  1               5                  10                  15
Trp Val Val Val Thr Leu Thr Phe Phe Ile Ile Lys Thr Ile Pro Gly
             20                  25                  30
Asp Pro Phe Asn Asp Glu Asn Gly Asn Ile Leu Ser Pro Glu Thr Leu
         35                  40                  45
Ala Leu Leu Lys Asn Arg Tyr Gly Leu Asp Lys Pro Leu Phe Thr Gln
     50                  55                  60
Tyr Leu Ile Tyr Leu Lys Cys Leu Leu Thr Leu Asp Phe Gly Glu Ser
 65                  70                  75                  80
Leu Ile Tyr Lys Asp Arg Thr Val Ile Ser Ile Ile Ala Ala Ala Leu
                 85                  90                  95
Pro Ser Ser Ala Ile Leu Gly Leu Glu Ser Leu Cys Leu Ser Leu Phe
            100                 105                 110
Gly Gly Ile Thr Leu Gly Ile Leu Ala Ala Phe Tyr Lys Lys Ser Cys
        115                 120                 125
Gly Arg Thr Ile Phe Phe Ser Ser Val Ile Gln Ile Ser Val Pro Ala
    130                 135                 140
Phe Val Ile Gly Ala Phe Leu Gln Tyr Val Phe Ala Ile Lys Tyr Ser
145                 150                 155                 160
Cys Leu Pro Ile Ala Cys Trp Gly Asn Phe Ser His Thr Leu Leu Pro
                165                 170                 175
Ser Ile Ala Leu Ala Ile Thr Pro Met Ala Phe Ile Thr Gln Leu Thr
            180                 185                 190
Tyr Ala Ser Val Ser Ala Asn Leu Lys Lys Xaa Thr Ser Tyr
        195                 200                 205
```

<210>252
<211>214
<212>PRT
<213>Chlamydia trachomatis
<400>252

```
Thr Lys Lys Leu Leu Pro Pro Trp Leu Leu Xaa Xaa Pro Ala Lys His
  1               5                  10                  15
Leu Leu Pro Ala His Leu His Thr Tyr Pro Glu Gln Pro Ser Tyr Lys
             20                  25                  30
Gln Gln Glu Ala Ile Thr Leu Ala Lys Ser Leu Leu Glu Glu Ala Leu
         35                  40                  45
Thr Glu Leu Asn Met Thr Ile Lys Asp Leu Glu Lys Tyr Pro Leu Thr
     50                  55                  60
Phe Ser Ala Thr Ser Thr Val Asn Ser Gln Ile Ala Gln Met Leu Arg
 65                  70                  75                  80
Asp Gln Trp Arg Arg Ser Leu Gly Ile Thr Phe Pro Ile Cys Gly Lys
                 85                  90                  95
Glu Tyr Ala Leu Leu Gln Asn Asp Leu Ile Gly Asn Thr Phe Phe Met
            100                 105                 110
Ser Ile Gly Gly Trp Phe Ala Asp Phe Ser Asp Pro Leu Ala Phe Leu
        115                 120                 125
Ser Ile Phe Ser Ser Lys Gly Val Lys Pro Tyr Ala Leu Gln Asp Pro
    130                 135                 140
Gln Phe Asp Gln Leu Ile Leu Ser Ile Glu Thr Glu Lys Asn Pro Gln
145                 150                 155                 160
Lys Arg Ser Ala Leu Ile Ser Glu Ala Ser Leu Tyr Ile Glu Arg Gln
                165                 170                 175
Asn Val Ile Glu Pro Leu Tyr His Asp Val Phe His Tyr Thr Thr Asn
            180                 185                 190
Asn Lys Leu Ser Phe Val Arg Leu His Pro Ser Gly Leu Val Asp Met
        195                 200                 205
Arg Tyr Ala Lys Asn Ser
    210
```

<210>253
<211>339
<212>PRT
<213>Chlamydia trachomatis
<400>253

```
Gly Gly His Ser Met Arg Lys Ile Ser Val Gly Ile Cys Leu Leu Leu
  1               5                  10                  15
Ala Leu Ala Thr Ser Gly Cys Ser Lys Ser Ser Ser Asn Ala Thr His
             20                  25                  30
Arg Ser Pro Ala Thr His Thr Val Ala Val Ser Val Lys Asp Asp Pro
         35                  40                  45
Arg Thr Phe Asp Pro Arg Glu Val Arg Leu Leu Ser Asp Ile Asn Leu
     50                  55                  60
Ile His His Leu Tyr Glu Gly Leu Val Gln Glu Thr Pro Ser Gly Glu
 65                  70                  75                  80
Val Phe Pro Ala Leu Ala Glu Ser Phe Phe Leu Ser Glu Asp Lys Lys
                 85                  90                  95
Thr Tyr Thr Phe Asn Leu Lys Lys Ala Phe Trp Ser Asn Gly Asp Leu
            100                 105                 110
Ile Thr Ala His Asp Phe Val Arg Ser Trp Asn Asp Val Leu Gln Asn
        115                 120                 125
Arg Val Ala Ser Ile Tyr Ser Phe Ala Phe Leu Pro Ile Asp Val Asn
    130                 135                 140
Lys Asp Ser Gly Phe Phe Ala Lys Asp Asp His Thr Leu Val Ile Asn
145                 150                 155                 160
Leu Leu Thr Pro Thr Pro His Phe Leu Lys Leu Leu Thr Leu Pro Val
                165                 170                 175
Phe Tyr Pro Val His Ser Gln His Gln Ile Trp Lys Glu Glu Lys Ser
            180                 185                 190
Leu Pro Ile Ser Thr Gly Ala Phe Phe Leu Lys Glu Lys Lys Asp Arg
        195                 200                 205
Arg Trp Leu Lys Leu Glu Lys Ser Pro Tyr Tyr Tyr Asn Lys Asp Gln
    210                 215                 220
Val Ala Val Gln Glu Ile Cys Ile His Ile Ile Pro Asp Gln Gln Thr
225                 230                 235                 240
Ala Ser Ala Leu Phe Asn Gln Gly Lys Leu Asp Trp Gln Gly Leu Pro
                245                 250                 255
Trp Gly His Ser Ile Pro Gln Glu Thr Leu Ala Thr Ala Asn Lys Arg
            260                 265                 270
Arg Ala Pro Gln Ser Phe Asp Ile Ser Gly Thr Ser Trp Leu Thr Phe
        275                 280                 285
Asn Thr Ala Lys Lys Pro Phe Ser His Ser Lys Leu Arg Gln Ala Leu
    290                 295                 300
Ser Leu Val Leu Asn Lys Glu Ala Leu Ala Ser Leu Ala Phe Val Xaa
305                 310                 315                 320
Xaa Cys Lys Thr Ser Pro Ser Cys Thr Phe Ala His Leu Pro Arg Ala
                325                 330                 335
Ala Phe Leu
```

<210>254
<211>341
<212>PRT
<213>Chlamydia trachomatis
<400>254

```
Val Phe Ala Met Leu Thr Leu Gly Leu Glu Ser Ser Cys Asp Glu Thr
  1               5                  10                  15
Ser Cys Ser Leu Val Gln Asn Gly Lys Ile Leu Ala Asn Lys Ile Ala
             20                  25                  30
Ser Gln Asp Ile His Ala Ser Tyr Gly Gly Val Ile Pro Glu Leu Ala
         35                  40                  45
Ser Arg Ala His Leu Gln Thr Phe Pro Glu Leu Leu Thr Ala Ala Thr
```

Substitute sheet

```
     50                  55                  60
Gln Ser Ala Gly Val Ser Leu Glu Asp Ile Glu Leu Ile Ser Val Ala
 65                  70                  75                  80
Asn Thr Pro Gly Leu Ile Gly Ala Leu Ser Ile Gly Val Asn Phe Ala
                85                  90                  95
Lys Gly Leu Ala Ser Gly Leu Lys Arg Pro Leu Ile Gly Val Asn His
            100                 105                 110
Val Glu Ala His Leu Tyr Ala Ala Cys Met Glu Ala Pro Ala Thr Gln
        115                 120                 125
Phe Pro Ala Leu Gly Leu Ala Ile Ser Gly Ala His Thr Ser Leu Phe
    130                 135                 140
Leu Met Pro Asp Ala Thr Thr Phe Leu Leu Ile Gly Lys Thr Arg Asp
145                 150                 155                 160
Asp Ala Ile Gly Glu Thr Phe Asp Lys Val Ala Arg Phe Leu Gly Leu
                165                 170                 175
Pro Tyr Pro Gly Gly Gln Lys Leu Glu Glu Leu Ala Arg Glu Gly Asp
            180                 185                 190
Ala Asp Ala Phe Ala Phe Ser Pro Ala Arg Val Ser Gly Tyr Asp Phe
        195                 200                 205
Ser Phe Ser Gly Leu Lys Thr Ala Val Leu Tyr Ala Leu Lys Gly Asn
    210                 215                 220
Asn Ser Ser Ala Lys Ala Pro Phe Pro Glu Val Ser Glu Thr Gln Lys
225                 230                 235                 240
Arg Asn Ile Ala Ala Ser Phe Gln Lys Ala Val Phe Met Thr Ile Ala
                245                 250                 255
Gln Lys Leu Pro Asp Ile Val Lys Ala Phe Ser Cys Glu Ser Leu Ile
            260                 265                 270
Val Gly Gly Gly Val Ala Asn Asn Ser Tyr Phe Arg Arg Leu Leu Asn
        275                 280                 285
Gln Ile Cys Ser Leu Pro Ile Tyr Phe Pro Ser Ser Gln Leu Cys Ser
    290                 295                 300
Asp Asn Ala Ala Met Ile Ala Gly Leu Gly Glu Arg Leu Phe Cys Asn
305                 310                 315                 320
Arg Thr His Val Ser Lys Glu Val Ile Pro Cys Ala Arg Tyr Gln Trp
                325                 330                 335
Glu Ser Ala Cys Ser
            340
```

<210>255
<211>522
<212>PRT
<213>Chlamydia trachomatis
<400>255

```
Met Xaa Xaa Xaa Arg Arg Ala Trp Lys Glu Xaa Asn Xaa Asn Glu Glu
  1                 5                  10                  15
Lys Leu Asp Val Ala Leu Thr Ser Gly Asn Leu Met Asp Ser Lys Thr
             20                  25                  30
Ser His Leu Asp Asp Glu Leu Cys Phe Lys Leu Glu Glu Ala Phe Asp
         35                  40                  45
Thr Leu Thr Ala Gly Glu His Ser Gln Asp Leu Thr Ser Ile Val Ser
     50                  55                  60
Val Tyr Asn Pro Ile Asp Leu Ala Tyr Ala Val Ser Cys Leu Pro Ser
 65                  70                  75                  80
Asp Ser Arg Ser Ile Leu Tyr Lys Asn Leu Asp Ser Ile Ala Ser Lys
                 85                  90                  95
Ile Ala Phe Ile Ile Asn Thr Asp Ser Ala Ser Arg Trp Ala Ile Phe
            100                 105                 110
Arg Asn Leu Ser Asp Gly Glu Ile Cys Ala Leu Ile Glu Gln Met Pro
        115                 120                 125
Pro Asp Glu Ala Ile Trp Val Leu Asp Asp Ile Pro Asp Arg Arg Tyr
    130                 135                 140
Arg Arg Ile Leu Asp Leu Ile Asp Val Lys Lys Ala Leu Lys Ile Arg
```

```
145                 150                 155                 160
Asp Leu Gln Lys His Gly Arg Asn Thr Ala Gly Arg Leu Met Thr Asn
                165                 170                 175
Glu Phe Phe Ala Phe Leu Met Glu Thr Thr Val Lys Glu Val Ala Thr
            180                 185                 190
Cys Ile Arg Asn Asn Pro Gly Ile Asp Leu Thr Arg Leu Val Phe Val
        195                 200                 205
Leu Asp Phe Lys Gly Glu Leu Gln Gly Phe Val Thr Asp Arg Ser Leu
    210                 215                 220
Ile Ile Ala Ser Pro Glu Met Pro Leu Lys Gln Ile Met Arg Pro Ile
225                 230                 235                 240
Glu His Lys Val Leu Ala Asp Thr Thr Arg Glu Glu Val Val Asp Leu
                245                 250                 255
Val Glu Arg Tyr Lys Val Ala Val Leu Pro Val Val Asp Glu Glu Asn
            260                 265                 270
Phe Leu Ile Gly Ala Ile Thr Tyr Glu Asp Val Val Glu Thr Ile Glu
        275                 280                 285
Asp Ile Ala Asp Glu Thr Ile Ala Arg Met Ala Gly Thr Thr Glu Asp
    290                 295                 300
Val Gly Tyr His Asp Cys His Val Val Gln Arg Phe Leu Leu Arg Ala
305                 310                 315                 320
Pro Trp Leu Leu Ile Thr Leu Cys Ala Gly Leu Val Ser Ala Ser Val
                325                 330                 335
Met Ala Tyr Phe Gln Lys Ile Ala Pro Thr Leu Leu Ala Met Val Ile
            340                 345                 350
Phe Phe Ile Pro Leu Val Asn Gly Leu Ser Gly Asn Val Gly Val Gln
        355                 360                 365
Cys Ser Thr Ile Leu Val Arg Ser Met Ala Thr Gly Thr Leu Ser Phe
    370                 375                 380
Gly Arg Arg Arg Glu Thr Ile Leu Lys Glu Met Ser Ile Gly Leu Leu
385                 390                 395                 400
Thr Gly Val Ala Leu Gly Ile Leu Cys Gly Leu Val Val Cys Cys Met
                405                 410                 415
Gly Cys Leu Gly Leu Gly Leu Phe Ala Thr Gly Gly Val Gln Leu Gly
            420                 425                 430
Val Thr Val Ser Val Gly Ile Leu Gly Ala Ser Leu Thr Ala Thr Thr
        435                 440                 445
Leu Gly Val Leu Ser Pro Phe Phe Phe Ala Lys Ile Gly Val Asp Pro
    450                 455                 460
Ala Leu Ala Ser Gly Pro Ile Val Thr Ala Leu Asn Asp Ile Val Ser
465                 470                 475                 480
Met Val Ile Phe Leu Leu Ile Thr Gly Thr Leu Asn Val Leu Phe Leu
                485                 490                 495
Gln Ile Val Gly Glu Ser Glu Asp Lys Gly Phe Leu Arg Ala Phe Phe
            500                 505                 510
Thr Met Ser Phe Leu Pro Leu Ser Leu Glu
        515                 520
<210>256
<211>361
<212>PRT
<213>Chlamydia trachomatis
<400>256
Arg Ser Gly Phe Val Ala Leu Arg Phe Glu Ile Leu His Gln Ser Lys
  1               5                  10                  15
Lys Ser Arg Ala Arg Val Gly Arg Ile Glu Thr Ala His Gly Tyr Ile
            20                  25                  30
Asp Thr Pro Ala Phe Val Pro Val Ala Thr Asn Gly Ala Leu Lys Gly
        35                  40                  45
Val Leu Asp His Ser Asn Ile Pro Leu Met Phe Cys Asn Thr Tyr His
    50                  55                  60
Leu Ile Val His Pro Gly Ala Glu Ala Ile Ala Ala Met Gly Gly Leu
```

```
 65                  70                  75                  80
His Gln Phe Ile Gly Arg Asn Ala Pro Ile Ile Thr Asp Ser Gly Gly
                 85                  90                  95
Phe Gln Ile Phe Ser Leu Ala Tyr Gly Ser Val Ala Glu Glu Ile Lys
            100                 105                 110
Ser Cys Gly Lys Lys Lys Gly Gly Asn Thr Ile Ile Lys Val Asn Asp
        115                 120                 125
Asp Gly Val His Phe Lys Ser Tyr Arg Asp Gly Arg Lys Leu Phe Leu
    130                 135                 140
Ser Pro Glu Ile Ser Val Gln Ala Gln Lys Asp Leu Gly Ala Asp Ile
145                 150                 155                 160
Ile Leu Pro Leu Asp Glu Leu Leu Pro Phe His Ala Asp Pro Thr Tyr
                165                 170                 175
Phe His Gln Ser Ser Gln Arg Thr Tyr Val Trp Glu Lys Arg Ser Leu
            180                 185                 190
Asp Tyr His Leu Lys Asn Pro Gly Ile Gln Ser Met Tyr Gly Val Ile
        195                 200                 205
His Gly Gly Thr Phe Pro Asp Gln Arg Lys Leu Gly Cys Lys Phe Val
    210                 215                 220
Glu Asp Leu Pro Phe Asp Gly Ser Ala Ile Gly Gly Ser Leu Gly Lys
225                 230                 235                 240
Asn Leu Gln Asp Ile Val Glu Val Val Gly Val Thr Ala Ala Asn Leu
                245                 250                 255
Ser Ala Glu Arg Pro Arg His Leu Leu Gly Ile Gly Asp Leu Pro Ser
            260                 265                 270
Ile Trp Ala Thr Val Gly Phe Gly Ile Asp Ser Phe Asp Ser Ser Tyr
        275                 280                 285
Pro Thr Lys Ala Ala Arg His Gly Ser Gly Ile Leu Thr Ser Gln Gly
    290                 295                 300
Pro Leu Lys Ile Asn Asn Gln Arg Tyr Ser Ser Asp Leu Asn Pro Ile
305                 310                 315                 320
Glu Pro Gly Cys Ser Cys Leu Ala Cys Ser Gln Gly Ile Thr Arg Ala
                325                 330                 335
Tyr Leu Arg His Leu Phe Lys Val His Glu Pro Asn Ala Gly Ile Trp
            340                 345                 350
Ala Ser Ile His Asn Met His His Met
        355                 360
<210>257
<211>260
<212>PRT
<213>Chlamydia trachomatis
<400>257
Asp Ser Phe Cys Val Phe Ile Gly Phe Ser Ile Lys Pro Phe Ala Val
  1               5                  10                  15
Tyr Leu Phe Asp Leu Lys Lys Thr Gly Lys Glu Glu Phe Val Gln Ser
             20                  25                  30
Val Gly Gln Glu Ala Ser Gln Asn Thr Leu Ser Trp Thr Ile Arg Pro
         35                  40                  45
Arg Ile Pro Ser Ile Ile Gln Gly Ser Lys Glu Val Ser Leu Ala Leu
     50                  55                  60
Phe Val Leu Gly Thr Val Leu Ala Ile Val Gly Ala Cys Ala Ala Ala
 65                  70                  75                  80
Val Gly Gly Ala Phe Ser Val Cys Leu Gly Ala Leu Phe Leu Gly Gly
                 85                  90                  95
Val Val Leu Ala Thr Gly Leu Leu Leu Ala Val Leu Glu Phe Cys His
            100                 105                 110
Ile Arg Ser Ser Arg Glu Lys Tyr Val Ile Leu Thr Lys Gln Asp Leu
        115                 120                 125
Phe Lys Glu Pro Val Ile Gln Glu Glu Gln Ala Thr Pro Leu Ile Glu
    130                 135                 140
Glu Ala Ser Tyr Thr Cys Glu Pro Gly Ile Pro Leu Ser Gly Pro Glu
```

```
145                 150                 155                 160
Glu Val Gln Gln Glu Arg Pro Val Ile Leu Gln Lys Asp Leu Asp Leu
                165                 170                 175
Ser His Val Pro Lys Tyr Ile Ala Val Gly Ser His Val Val Glu Leu
            180                 185                 190
Val Lys Ala Gly Lys Ile Gly Arg Asn Gly Glu Leu Leu Leu Glu Glu
        195                 200                 205
Gly Ile Asp Thr Asp Gln Asn Phe Val Arg Arg Ala Lys Glu Ala Gly
    210                 215                 220
Ser Ile Arg Gln Arg Arg Glu Val Val Arg Leu Asp Gly Phe Cys Cys
225                 230                 235                 240
Lys Val Leu Pro Lys Thr Ser Lys Ser Glu Ser Ile Asn Asp Leu Val
                245                 250                 255
Ser Asn Asp Cys
            260
```

<210>258
<211>136
<212>PRT
<213>Chlamydia trachomatis
<400>258

```
Glu Pro Ser Ser Xaa Ala Phe Cys Glu Gly Arg Cys Ala Cys Ala Tyr
  1               5                  10                  15
Arg Arg Ser Val Val Ser Phe Tyr Pro Gln Asn Leu Pro Ser Phe Arg
            20                  25                  30
Arg Arg Lys Pro Ser Arg Thr Asp Ser Pro Ile Lys His Ala Lys His
        35                  40                  45
Phe Leu Arg Asp His Leu Ser His Leu Arg Lys Ile Leu Ala Gly Lys
    50                  55                  60
Pro Gln Glu Val Ile Glu Ala Trp Tyr Glu Ile Leu Gly Lys Lys Tyr
65                  70                  75                  80
Asn Gly Met Thr Gln Ala Ile Gly Leu Lys Asp Gly Ile Leu Ser Ile
                85                  90                  95
Lys Val Arg Asn Ala Ser Leu Tyr Ala Val Leu Lys Gln Ser Ser Gln
            100                 105                 110
Lys Glu Leu Ile Ser Arg Ile His Ser Ala Val Pro Gly Ala Lys Val
        115                 120                 125
Lys Glu Ile Arg Phe Leu Leu Gly
    130                 135
```

<210>259
<211>804
<212>PRT
<213>Chlamydia trachomatis
<400>259

```
Met Asp Ala Gln Glu Lys Lys Tyr Asp Ala Ser Ala Ile Thr Val Leu
  1               5                  10                  15
Glu Gly Leu Gln Ala Val Arg Glu Arg Pro Gly Met Tyr Ile Gly Asp
            20                  25                  30
Thr Gly Val Thr Gly Leu His His Leu Val Tyr Glu Val Val Asp Asn
        35                  40                  45
Ser Ile Asp Glu Ala Met Ala Gly Phe Cys Thr Glu Val Val Val Arg
    50                  55                  60
Ile Leu Glu Asp Gly Gly Ile Ser Ile Ser Asp Asn Gly Arg Gly Ile
65                  70                  75                  80
Pro Ile Gln Ile His Glu Lys Glu Ser Ala Lys Gln Gly Arg Glu Ile
                85                  90                  95
Ser Ala Leu Glu Val Val Leu Thr Val Leu His Ala Gly Gly Lys Phe
            100                 105                 110
Asp Lys Asp Ser Tyr Lys Val Ser Gly Gly Leu Xaa Gly Val Gly Val
        115                 120                 125
Ser Cys Val Asn Ala Leu Ser Glu Lys Phe Ile Ala Lys Val Phe Lys
    130                 135                 140
```

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```
Asp Gly Gln Ala Tyr Ser Met Glu Phe Ser Arg Gly Ala Pro Leu Thr
145                 150                 155                 160
Thr Leu Gln Val Leu Gly Pro Thr Asp Lys Arg Gly Thr Glu Val Leu
                165                 170                 175
Phe Tyr Pro Asp Pro Ala Ile Phe Ser Thr Cys Val Phe Asp Arg Ala
            180                 185                 190
Ile Leu Met Lys Arg Leu Arg Glu Leu Ala Phe Leu Asn Arg Gly Ala
        195                 200                 205
Thr Ile Val Phe Glu Asp Asp Arg Asp Thr Gly Phe Asp Lys Val Val
    210                 215                 220
Phe Phe Tyr Glu Gly Gly Ile Gln Ser Phe Val Ser Tyr Leu Asn Gln
225                 230                 235                 240
Asn Lys Glu Ile Leu Phe Pro Asn Pro Ile Tyr Ile Gln Gly Ser Arg
                245                 250                 255
Pro Gly Asp Asp Gly Asp Ile Glu Phe Glu Ala Ala Leu Gln Trp Asn
            260                 265                 270
Ser Gly Tyr Ser Glu Leu Ile Tyr Ser Tyr Ala Asn Asn Ile Pro Thr
        275                 280                 285
Arg Gln Gly Gly Thr His Leu Thr Gly Phe Ser Thr Ala Leu Thr Arg
    290                 295                 300
Ala Val Asn Ser Tyr Ile Lys Ala His Asn Leu Ser Lys Ser Asp Lys
305                 310                 315                 320
Leu Ser Leu Thr Gly Glu Asp Ile Lys Glu Gly Leu Val Ala Ile Val
                325                 330                 335
Ser Val Lys Val Pro Asn Pro Gln Phe Glu Gly Gln Thr Lys Gln Lys
            340                 345                 350
Leu Gly Asn Ser Asp Val Gly Ser Val Ser Gln Gln Ile Ser Gly Glu
        355                 360                 365
Val Leu Thr Thr Phe Phe Glu Glu Asn Thr Gln Ile Ala Lys Thr Ile
    370                 375                 380
Val Asp Lys Val Phe Val Ala Ala Gln Ala Arg Glu Ala Ala Lys Arg
385                 390                 395                 400
Ala Arg Glu Leu Thr Phe Arg Lys Ser Ala Leu Asp Ser Ala Arg Leu
                405                 410                 415
Pro Gly Lys Leu Ile Asp Cys Leu Glu Lys Asp Pro Glu Lys Cys Glu
            420                 425                 430
Met Tyr Ile Val Glu Gly Asp Ser Ala Gly Gly Ser Ala Lys Gln Gly
        435                 440                 445
Arg Asp Arg Arg Phe Gln Ala Ile Leu Pro Ile Arg Gly Lys Ile Leu
    450                 455                 460
Asn Val Glu Lys Ala Arg Leu Gln Lys Val Phe Gln Asn Gln Glu Ile
465                 470                 475                 480
Gly Ser Ile Ile Ala Ala Leu Gly Cys Gly Ile Gly Lys Asp Asn Phe
                485                 490                 495
Asn Leu Ser Lys Leu Arg Tyr Lys Arg Ile Ile Ile Met Thr Asp Ala
            500                 505                 510
Asp Val Asp Gly Ser His Ile Arg Thr Leu Leu Leu Thr Phe Phe Tyr
        515                 520                 525
Arg His Met Ser Ala Leu Ile Glu Asn Glu Cys Val Tyr Ile Ala Gln
    530                 535                 540
Pro Pro Leu Tyr Arg Val Ser Lys Lys Lys Asp Phe Arg Tyr Ile Leu
545                 550                 555                 560
Ser Glu Lys Glu Met Asp Gly Tyr Leu Leu Asn Leu Gly Thr Lys Glu
                565                 570                 575
Ser Gln Ile Val Phe Asp Asp Thr Leu Arg Asp Leu Arg Gly Glu Ala
            580                 585                 590
Leu Glu Thr Phe Val Asn Leu Ile Leu Glu Val Glu Ser Phe Ile Val
        595                 600                 605
Ser Leu Glu Lys Lys Ala Ile Pro Phe Ser Glu Phe Leu Asp Met Phe
    610                 615                 620
Arg Asp Gly Ala Tyr Pro Leu Tyr Tyr Tyr Pro Pro Glu Ser Gly Lys
```

625 630 635 640
Gln Gly Gly Ser Tyr Leu Tyr Ser His Glu Glu Lys Glu Ala Ala Ile
645 650 655
Ala Ala Asn Glu Glu Ser Ala Ser Arg Ile Leu Glu Leu Tyr Lys Gly
660 665 670
Ser Val Leu Glu Glu Leu Gln Arg Asp Leu Gly Asp Tyr Gly Tyr Asp
675 680 685
Ile Arg Asn Tyr Leu His Pro Lys Gly Ser Gly Ile Thr Val Ser Thr
690 695 700
Glu Asp Pro Lys Ile Ser Pro Tyr Val Cys Tyr Thr Leu Lys Glu Val
705 710 715 720
Ile Asp Tyr Leu Lys Gly Leu Gly Arg Lys Gly Ile Glu Ile Gln Arg
725 730 735
Tyr Lys Gly Leu Gly Glu Met Asn Ala Asp Gln Leu Trp Asp Thr Thr
740 745 750
Met Asn Pro Glu Gln Arg Thr Leu Val Arg Val Ser Leu Lys Asp Ala
755 760 765
Val Glu Ala Asp His Ile Phe Thr Met Leu Met Gly Glu Glu Val Pro
770 775 780
Pro Arg Arg Glu Phe Ile Lys Ser His Ala Leu Ser Ile Arg Met Asn
785 790 795 800
Asn Leu Asp Ile

<210>260
<211>836
<212>PRT
<213>Chlamydia trachomatis
<400>260
Met Leu Asn Lys Glu Glu Ile Ile Val Pro Lys Asn Leu Glu Glu Glu
1 5 10 15
Met Lys Glu Ser Tyr Leu Arg Tyr Ser Met Ser Val Ile Ile Ser Arg
20 25 30
Ala Leu Pro Asp Ala Arg Asp Gly Leu Lys Pro Ser Gln Arg Arg Ile
35 40 45
Leu Tyr Ala Met Lys Gln Leu Asn Leu Thr Pro Gly Val Lys His Arg
50 55 60
Lys Cys Ala Lys Ile Cys Gly Asp Thr Ser Gly Asp Tyr His Pro His
65 70 75 80
Gly Glu Ser Val Ile Tyr Pro Thr Leu Val Arg Met Ala Gln Asp Trp
85 90 95
Ala Met Arg Tyr Pro Leu Val Asp Gly Gln Gly Asn Phe Gly Ser Ile
100 105 110
Asp Gly Asp Pro Ala Ala Ala Met Arg Tyr Thr Glu Ala Arg Leu Thr
115 120 125
His Ser Ala Ile Phe Leu Leu Glu Asp Leu Asp Lys Asp Thr Val Asp
130 135 140
Met Val Pro Asn Tyr Asp Glu Thr Lys Tyr Glu Pro Val Val Phe Pro
145 150 155 160
Ser Lys Phe Pro Asn Leu Leu Cys Asn Gly Ser Ser Gly Ile Ala Val
165 170 175
Gly Met Ala Thr Asn Ile Pro Pro His Asn Leu Gly Glu Leu Ile Glu
180 185 190
Ala Thr Leu Leu Val Leu Ala Asn Ser Gln Thr Ser Ile Glu Asp Ile
195 200 205
Leu Glu Val Met Pro Gly Pro Asp Phe Pro Thr Gly Gly Ile Ile Cys
210 215 220
Gly Thr Glu Gly Ile Arg Ser Thr Tyr Tyr Thr Gly Arg Gly Lys Leu
225 230 235 240
Arg Leu Arg Ala Arg Met His Val Glu Glu Asn Ser Asp Lys Gln Arg
245 250 255
Glu Asn Ile Ile Leu Thr Glu Met Pro Tyr Asn Val Asn Lys Ser Pro

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                260                 265                 270
Leu Ile Glu Gln Ile Ala Glu Leu Ile Asn Glu Lys Thr Leu Thr Gly
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Ile Ser Asp Val Arg Asp Glu Ser Asp Lys Asp Gly Asn Arg Val Val
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Leu Glu Leu Lys Lys Gly Glu Ser Ser Glu Val Val Ile Asn Arg Leu
305                 310                 315                 320
Tyr Lys Phe Thr Asp Val Gln Val Thr Phe Gly Ala Asn Met Leu Ala
                325                 330                 335
Leu Asp Lys Asn Leu Pro Arg Thr Met Asn Ile His Arg Met Ile Ser
            340                 345                 350
Ala Trp Ile Arg His Arg Met Asp Val Ile Arg Arg Arg Thr Arg Tyr
        355                 360                 365
Glu Leu Asn Lys Ala Glu Ala Arg Ala His Ile Leu Glu Gly Phe Leu
    370                 375                 380
Lys Ala Leu Ser Cys Met Asp Glu Val Val Lys Thr Ile Arg Glu Ser
385                 390                 395                 400
Ser Asn Lys Glu His Ala Lys Gln Gln Leu Val Glu Leu Phe Ser Phe
                405                 410                 415
Ser Glu Ala Gln Ala Leu Ala Ile Leu Glu Leu Arg Leu Tyr Gln Leu
            420                 425                 430
Thr Gly Leu Glu Ala Asp Lys Val Gln Lys Glu Tyr Ser Glu Leu Leu
        435                 440                 445
Glu Lys Ile Thr Tyr Tyr Arg Lys Val Leu Ala Glu Glu Glu Leu Val
    450                 455                 460
Lys Asp Ile Ile Arg Glu Glu Leu Gln Glu Leu His Lys Val His Lys
465                 470                 475                 480
Thr Pro Arg Arg Thr Lys Ile Glu Met Asp Thr Gly Asp Val Arg Asp
                485                 490                 495
Ile Glu Asp Ile Ile Ser Asp Glu Ser Val Ile Ile Thr Ile Ser Gly
            500                 505                 510
Asp Asp Tyr Val Lys Arg Met Pro Val Lys Val Phe Arg Glu Gln Lys
        515                 520                 525
Arg Gly Gly Gln Gly Val Thr Gly Phe Asp Met Lys Lys Gly Ser Asp
    530                 535                 540
Phe Leu Lys Ala Val Tyr Ser Ala Ser Thr Lys Asp Tyr Leu Leu Ile
545                 550                 555                 560
Phe Thr Asn Phe Gly Gln Cys Tyr Trp Leu Lys Val Trp Gln Leu Pro
                565                 570                 575
Glu Gly Glu Arg Arg Ala Lys Gly Lys Pro Ile Ile Asn Phe Leu Glu
            580                 585                 590
Gly Ile Arg Pro Gly Glu Gln Val Ala Ala Val Leu Asn Val Lys Arg
        595                 600                 605
Phe Glu Gln Gly Glu Tyr Leu Phe Leu Ala Thr Lys Lys Gly Val Val
    610                 615                 620
Lys Lys Val Ser Leu Asp Ala Phe Gly Ser Pro Arg Lys Lys Gly Ile
625                 630                 635                 640
Arg Ala Leu Glu Ile Asp Asp Gly Asp Glu Leu Ile Ala Ala Arg His
                645                 650                 655
Ile Ala Asn Asp Glu Glu Lys Val Met Leu Phe Thr Arg Leu Gly Met
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Ala Val Arg Phe Pro His Asp Lys Val Arg Pro Met Gly Arg Ala Ala
        675                 680                 685
Arg Gly Val Arg Gly Val Ser Leu Lys Asn Glu Gln Asp Phe Val Val
    690                 695                 700
Ser Cys Gln Val Val Thr Glu Asp Gln Ser Val Leu Val Val Cys Asp
705                 710                 715                 720
Asn Gly Phe Gly Lys Arg Ser Leu Val Cys Asp Phe Arg Glu Thr Asn
                725                 730                 735
Arg Gly Ser Val Gly Val Arg Ser Ile Val Ile Asn Gln Arg Asn Gly
            740                 745                 750
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Asp Val Leu Gly Ala Ile Ser Val Thr Asp Cys Asp Ser Ile Leu Leu
755 760 765
Met Ser Ala Gln Gly Gln Ala Ile Arg Ile Asn Met Gln Asp Val Arg
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Val Met Gly Arg Ala Thr Gln Gly Val Arg Leu Val Asn Leu Arg Glu
785 790 795 800
Gly Asp Thr Leu Val Ala Met Glu Lys Leu Ser Ile Asn Thr Glu Ser
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820 825 830
Thr Ile Glu Glu
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35 40 45
Val Arg Gly Leu Leu Leu Asp Pro Glu Gln Lys Ile Ser Pro Tyr Ala
50 55 60
Glu Leu Leu Leu Phe Leu Ala Ala Arg Ala Gln His Ile Gln Glu Lys
65 70 75 80
Ile Ile Pro Ala Leu Lys Ser Gly Lys Thr Val Ile Ser Asp Arg Phe
85 90 95
His Asp Ser Thr Ile Val Tyr Gln Gly Ile Ala Gly Gly Leu Gly Glu
100 105 110
Ser Phe Val Thr Asn Leu Cys Tyr His Val Val Gly Asp Lys Pro Phe
115 120 125
Leu Pro Asp Ile Ile Phe Leu Leu Asp Ile Pro Ala Arg Glu Gly Leu
130 135 140
Leu Arg Lys Ala Arg Gln Lys His Leu Asp Lys Phe Glu Gln Lys Pro
145 150 155 160
Gln Ile Phe His Gln Ser Val Arg Glu Gly Phe Leu Ala Leu Ala Glu
165 170 175
Lys Ala Pro Asp Arg Tyr Lys Val Leu Asp Ala Leu Leu Pro Thr Glu
180 185 190
Ala Ser Val Asp Gln Ala Leu Leu Gln Ile Arg Ala Leu Ile
195 200 205

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<400>262
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Gln Asp Leu Ser Asn Leu Ser Ala Arg Ala Tyr Glu Tyr Ala Ser Leu
35 40 45
Ile Ile Lys Glu Thr Leu Pro Glu Ala Ala Tyr Lys Leu Ala Asn Lys
50 55 60
Leu His Pro Asp Ile His Glu Tyr Ser Pro Gln Gly Lys Gly Arg Leu
65 70 75 80
His Thr Ile Glu Thr Pro Arg Ala Ile Arg Lys Asp Ile Trp Ile His
85 90 95
Pro Tyr Glu Ser Pro Tyr Lys Ile Tyr Ile Ile Tyr Glu Ala Asp Arg

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            100                 105                 110
Ile Thr Leu Asp Ala Ile Ser Ala Phe Leu Lys Leu Leu Glu Asp Pro
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Pro Gln Tyr Gly Met Phe Ile Leu Val Ser Ala Leu Pro Gln Arg Leu
    130                 135                 140
Pro Pro Thr Ile Arg Ser Arg Cys Val Ser Phe His Ile Pro Met Glu
145                 150                 155                 160
Glu Lys Thr Leu Val Ser Lys Lys Asp Ile Ala Phe Leu Ile Gly Leu
                165                 170                 175
Ala Gln Gly Lys Glu Ser Val Thr Arg Ile Gly Ser Gln Val Lys Gly
            180                 185                 190
Thr Ala Asp Glu Asp Lys Gln Val Leu Arg Asp Lys Thr Lys Ala Met
        195                 200                 205
Leu Thr Val Leu Leu Gln Leu Phe Arg Asp Arg Phe Leu Leu Ala Lys
    210                 215                 220
Lys Val Pro Val Ser Leu Leu Ala Tyr Pro Asp Leu Leu Asn Glu Ile
225                 230                 235                 240
Lys Thr Met Pro Val Tyr Pro Leu Glu Glu Val Leu Ser Ile Ile Thr
                245                 250                 255
Arg Ala Val Gln Ala Leu Asp Ser Tyr Ser Ser Ala Pro Ser Cys Leu
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Ala Ile Arg Asn Arg Arg Arg Ser
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<213>Chlamydia trachomatis
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            20                  25                  30
Cys Tyr Asp Trp Ile Ser Thr Ala Asn Lys Ala Ile His Lys Arg Gly
        35                  40                  45
Ala Phe Tyr Val Ala Leu Ser Gly Gly Lys Thr Pro Leu Gln Ile Phe
    50                  55                  60
Gln Glu Ile Val Lys Lys Arg Ala Ala Ile Ser Asp Cys Ser Lys Ile
65                  70                  75                  80
Val Val Phe Trp Gly Asp Glu Arg Ala Asn Glu Asp Val Glu Ala Gly
                85                  90                  95
Ser Asn Tyr Leu Lys Ala Met Asp Ile Leu Lys Gly Leu Arg Ile Pro
            100                 105                 110
Glu Asp Gln Ile Phe Arg Met Asp Thr Ala Asp Pro Lys Gly Asp Glu
        115                 120                 125
Ala Tyr Glu Ala Leu Ile Gln Lys Tyr Val Pro Asp Ala Ile Phe Asp
    130                 135                 140
Met Val Met Leu Gly Val Gly Glu Asp Gly His Thr Leu Ser Leu Phe
145                 150                 155                 160
Pro Glu Thr Gln Ala Leu Glu Glu Lys Glu Arg Phe Val Val Phe Asn
                165                 170                 175
Glu Val Pro Gln Leu His Thr Arg Arg Met Thr Leu Thr Phe Pro Ile
            180                 185                 190
Val Arg Gln Ala Arg His Leu Val Ala Tyr Val Gln Gly Glu Asn Lys
        195                 200                 205
Gln Asp Leu Phe His Lys Leu Val His Pro Leu Gly Arg Asp Thr Phe
    210                 215                 220
Pro Ile Glu Arg Val Gly Thr Pro Leu Asn Pro Val Gln Trp Val Leu
225                 230                 235                 240
Ser Ser Asp Ser Cys Arg Lys Thr Asp Leu Ala Asp Ile Pro Ala Asp
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245 250 255
Cys Lys Leu Glu Met Phe
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Phe Lys Lys Ser Ser Tyr Asn Leu Phe Asn Ala Glu Asn Cys Pro Leu
35 40 45
Cys Pro Leu Asp Asn Asp Leu Leu Ile Ile Arg Ile Gln Pro Asp Glu
50 55 60
Gly Val Ala Leu Gln Phe Asn Cys Lys Val Pro Gly Thr Asn Lys Leu
65 70 75 80
Val Arg Pro Val Lys Met Asp Phe Arg Tyr Asp Ser Tyr Phe Asn Thr
85 90 95
Val Thr Pro Glu Ala Tyr Glu Arg Leu Leu Cys Asp Cys Ile Leu Gly
100 105 110
Asp Arg Thr Leu Phe Thr Ser Asn Glu Glu Val Leu Ala Ser Trp Glu
115 120 125
Leu Phe Ser Pro Leu Leu Glu Lys Trp Ser Gln Val His Pro Ile Phe
130 135 140
Pro Asn Tyr Met Ala Gly Ser Leu Arg Pro Gln Glu Ala Asp Glu Leu
145 150 155 160
Leu Ser Arg Asp Gly Lys Ala Trp Arg Pro Tyr
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20 25 30
Leu Thr Ser Arg Lys Leu Phe Pro Ala Leu Tyr Asn Leu Thr Lys Glu
35 40 45
Gly Arg Leu Ser Glu Asn Phe Val Cys Val Gly Phe Ala Arg Arg Pro
50 55 60
Lys Ser His Glu Gln Phe Arg Glu Glu Met Lys Leu Ala Val Gln His
65 70 75 80
Phe Ser His Ser Ser Glu Ile Asp Ile Arg Val Trp Glu Ser Leu Glu
85 90 95
Asn Arg Ile Phe Tyr His Gln Ala Asn Phe Ser Asp Ala Glu Gly Tyr
100 105 110
Ser Ala Leu Lys Ala Tyr Leu Glu Gln Leu Asp Gln Gln Tyr Gly Thr
115 120 125
Gln Gly Asn Arg Leu Phe Tyr Leu Ser Thr Pro Pro Asp Tyr Phe Gln
130 135 140
Glu Ile Ile Arg Asn Leu Asn Arg His Gln Leu Phe Tyr His Glu Gln
145 150 155 160
Gly Ala Gln Gln Pro Trp Ser Arg Leu Ile Ile Glu Lys Pro Phe Gly
165 170 175
Val Asn Leu Glu Thr Ala Arg Glu Leu Gln Gln Cys Ile Asp Ala Asn
180 185 190
Ile Asp Glu Glu Ser Val Tyr Arg Ile Asp His Tyr Leu Gly Lys Glu
195 200 205

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Thr Val Gln Asn Ile Leu Thr Ile Arg Phe Ala Asn Thr Leu Phe Glu
    210                 215                 220
Ser Cys Trp Asn Ser Gln Tyr Ile Asp His Val Gln Ile Ser Val Ser
225                 230                 235                 240
Glu Ser Ile Gly Ile Gly Ser Arg Gly Asn Phe Phe Glu Lys Ser Gly
                245                 250                 255
Met Leu Arg Asp Met Val Gln Asn His Leu Thr Gln Leu Leu Cys Leu
            260                 265                 270
Leu Thr Met Glu Pro Pro Ser Glu Phe Ser Ser Glu Glu Ile Lys Lys
        275                 280                 285
Glu Lys Ile Lys Ile Leu Lys Lys Ile Leu Pro Ile Arg Glu Glu Asp
    290                 295                 300
Ala Val Arg Gly Gln Tyr Gly Glu Gly Ile Val Gln Asp Val Ser Val
305                 310                 315                 320
Leu Gly Tyr Arg Glu Glu Glu Asn Val Asp Pro Asn Ser Ser Val Glu
                325                 330                 335
Thr Tyr Val Ala
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            20                  25                  30
Ile Glu Val Ile Leu Trp Asp Glu Arg Leu Ser Ser Ala Gln Ala Glu
        35                  40                  45
Arg Met Leu Lys Ser Asp Cys Gly Leu Asn Arg Lys Gln Arg Lys Asn
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Ser Ser Asp Ser Leu Ala Ala Thr Leu Ile Leu Ser Ser Phe Leu Asp
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Ser Arg Lys Leu Tyr
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<400>267
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Lys Lys Arg Ile Gly Leu Ala Phe Ala Ser Ser Pro Leu Leu Ile Pro
            20                  25                  30
Leu Pro Ile Gly Asn Val Glu Ala Arg Ser Ser Leu Thr Leu Thr Ala
        35                  40                  45
Gln Ala Leu Val Ser Ile Ile Lys Glu Arg Ala Val Thr Thr Val Val
    50                  55                  60
Phe Gly Glu Ser Ile Thr Tyr Ala Lys Ser Leu Cys Phe Lys Arg Ala
65                  70                  75                  80
Ile Arg Asn Ser Arg Thr Ser Arg Thr His Pro Arg Asn Asp Cys Tyr
                85                  90                  95
Arg Ser His Ser Leu Gly
            100
<210>268
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<213>Chlamydia trachomatis
<400>268
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Sequence Listing

SEQUENCE LISTING

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Gly Lys Gly Leu Thr Ala Ala Ser Leu Ala Leu Leu Leu Glu Arg Gln
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Asp Leu Lys Val Ala Met Leu Lys Leu Asp Pro Tyr Leu Asn Val Asp
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Pro Gly Thr Met Asn Pro Tyr Glu His Gly Glu Val Tyr Val Thr Asp
    50                  55                  60
Asp Gly Val Glu Thr Asp Leu Asp Leu Gly His Tyr His Arg Phe Ser
65                  70                  75                  80
Ser Val Gln Leu Ser Lys Tyr Ser Ile Ala Thr Ser Gly Gln Ile Tyr
                85                  90                  95
Thr Lys Val Leu Thr Lys Glu Arg Asn Gly Glu Phe Leu Gly Ser Thr
            100                 105                 110
Val Gln Val Ile Pro His Val Thr Asn Glu Ile Ile Asn Val Ile Gln
        115                 120                 125
Ser Cys Ala Asp His His Lys Pro Asp Ile Leu Ile Val Glu Ile Gly
    130                 135                 140
Gly Thr Ile Gly Asp Ile Glu Ser Leu Pro Phe Leu Glu Ala Val Arg
145                 150                 155                 160
Gln Phe Arg Cys Glu His Pro Gln Asp Cys Leu Ser Ile His Met Thr
                165                 170                 175
Tyr Val Pro Tyr Leu Arg Ala Ala Lys Glu Ile Lys Thr Lys Pro Thr
            180                 185                 190
Gln His Ser Val Gln Asn Leu Arg Ser Ile Gly Ile Ser Pro Asp Val
        195                 200                 205
Ile Leu Cys Arg Ser Glu Ala Pro Leu Ser Thr Glu Val Lys Arg Lys
    210                 215                 220
Ile Ser Leu Phe Cys Asn Val Pro Glu His Ala Val Phe Asn Ala Ile
225                 230                 235                 240
Asp Leu Glu Arg Ser Ile Tyr Glu Met Pro Leu Leu Leu Ala Lys Glu
                245                 250                 255
Asn Ile Ser Asp Phe Leu Leu Asn Lys Leu Gly Phe Ser Pro Lys Pro
            260                 265                 270
Leu Asp Leu Ser Asp Trp Gln Asp Leu Val Glu Ala Leu Cys Asp Lys
        275                 280                 285
Glu Arg Gln His Val Arg Ile Gly Leu Val Gly Lys Tyr Leu Glu His
    290                 295                 300
Lys Asp Ala Tyr Lys Ser Val Phe Glu Ala Leu Phe His Ala Ser Val
305                 310                 315                 320
Pro Ala Asn Cys Ser Leu Glu Leu Val Pro Ile Ala Pro Glu Ser Glu
                325                 330                 335
Asp Leu Leu Glu Gln Leu Ser Gln Cys Asp Gly Cys Leu Ile Pro Gly
            340                 345                 350
Gly Phe Gly Thr Arg Ser Trp Glu Gly Lys Ile Ser Ala Ala Arg Tyr
        355                 360                 365
Cys Arg Glu Gln Asn Ile Pro Cys Phe Gly Ile Cys Leu Gly Met Gln
    370                 375                 380
Ala Leu Val Val Glu Tyr Ala Arg Asn Val Leu Asp Lys Pro Leu Ala
385                 390                 395                 400
Asn Ser Met Glu Met Asn Pro Glu Thr Pro Asp Pro Val Val Cys Met
                405                 410                 415
Met Glu Gly Gln Asp Ser Val Val Lys Gly Gly Thr Met Arg Leu Gly
            420                 425                 430
Ala Tyr Pro Cys Arg Ile Ala Pro Gly Ser Leu Ala Ser Ala Ala Tyr
        435                 440                 445
Lys Thr Asp Leu Val Gln Glu Arg His Arg His Arg Tyr Glu Val Asn
    450                 455                 460
Pro Ser Tyr Ile Glu Arg Leu Glu Glu His Gly Leu Lys Ile Ala Gly
465                 470                 475                 480
Val Cys Pro Leu Gly Glu Leu Cys Glu Ile Val Glu Ile Pro Asn His
                485                 490                 495
Arg Trp Met Leu Gly Val Gln Phe His Pro Glu Phe Leu Ser Lys Leu
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Tyr Ser Leu Glu Lys Ala Asn His Glu His Arg
    530                 535
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<213>Chlamydia trachomatis
<400>269
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             20                  25                  30
Arg Phe Pro Gly Lys Pro Leu Ala Lys Ile Leu Gly Lys Thr Leu Val
         35                  40                  45
Gln Arg Ser Tyr Glu Asn Ala Leu Ser Ser Gln Ser Leu Asp Cys Val
     50                  55                  60
Val Val Ala Thr Asp Asp Gln Arg Ile Phe Asp His Val Val Glu Phe
 65                  70                  75                  80
Gly Gly Leu Cys Val Met Thr Ser Thr Ser Cys Ala Asn Gly Thr Glu
                 85                  90                  95
Arg Val Glu Glu Val Val Ser Arg His Phe Pro Gln Ala Glu Ile Val
            100                 105                 110
Val Asn Ile Gln Gly Asp Glu Pro Cys Leu Ser Pro Thr Val Ile Asp
        115                 120                 125
Gly Leu Val Ser Thr Leu Glu Asn Asn Pro Ala Ala Asp Met Val Thr
    130                 135                 140
Pro Val Thr Glu Thr Thr Asp Pro Glu Ala Ile Leu Thr Asp His Lys
145                 150                 155                 160
Val Lys Cys Val Phe Asp Lys Asn Gly Lys Ala Leu Tyr Phe Ser Arg
                165                 170                 175
Ser Ala Ile Pro His Asn Phe Lys His Pro Thr Pro Ile Tyr Leu His
            180                 185                 190
Ile Gly Val Tyr Ala Phe Arg Lys Ala Phe Leu Ser Glu Tyr Val Lys
        195                 200                 205
Ile Pro Pro Ser Ser Leu Ser Leu Ala Glu Asp Leu Glu Gln Leu Arg
    210                 215                 220
Val Leu Glu Thr Gly Arg Ser Ile Tyr Val His Val Val Gln Asn Ala
225                 230                 235                 240
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Tyr Leu Leu Cys Leu Ser Lys Ala Ser Phe
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             20                  25                  30
Ser Glu Ala Phe Ser Glu Glu Gly Thr Ser Gly Phe Leu Gly Arg Met
         35                  40                  45
Lys Ser Trp Ile Leu Lys Asp Lys Thr Ile Leu Ser Thr Thr Glu Glu
     50                  55                  60
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 65                  70                  75                  80
Arg Tyr Asp Tyr Thr Gln Glu Ser Gly Phe Ala Ile Gln Phe Pro Glu
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             20                  25                  30
Ala Ser Gly Gln Ile Ser Met Val Leu Gly Ala Ser Gly Ser Gly Lys
         35                  40                  45
Thr Thr Leu Phe Arg Ile Ile Val Gly Leu Leu Ser Cys Ser Leu Gly
     50                  55                  60
Glu Ile Leu Trp Lys Gly Gln Pro Ile Gln Gln Glu Gln Ile Ala Tyr
 65                  70                  75                  80
Met Gln Gln Lys Glu Ala Leu Leu Pro Trp Arg Thr Val Arg Lys Asn
                 85                  90                  95
Ile Leu Leu Leu Thr Glu Leu Gly Ser Arg Lys Gln Lys Thr Thr Ile
            100                 105                 110
Glu Glu Glu Cys Phe Tyr Asn Val Val His Ser Phe Gly Leu Ser Ser
        115                 120                 125
Leu Leu Asp Arg Phe Pro Asp Glu Leu Ser Gly Gly Gln Arg Gln Arg
    130                 135                 140
Val Val Phe Ala Met Gln Ser Leu Ser Pro Lys Pro Ile Leu Leu Leu
145                 150                 155                 160
Asp Glu Pro Phe Thr Ser Leu Asp Pro Ile Thr Lys Xaa Ile Leu Tyr
                165                 170                 175
Gln Asp Val Lys Arg Leu Ala Lys Glu Glu Gly Lys Thr Ile Ile Leu
            180                 185                 190
Ala Ser His Asp Val Gln Asp Cys Leu Gly Val Gly Glu Ala Phe Phe
        195                 200                 205
Ala Ile Lys Asn Gln Lys Leu His Ser Ile Ala Leu Asn Lys Glu Gln
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Gly Glu Ile Arg Thr His Glu Val Arg Ser Val Pro Leu Val Phe Phe
     50                  55                  60
Ala Met Leu Ala Ala Val Gly Ala Phe Leu Ala Leu Cys Ile Gly Gly
 65                  70                  75                  80
Val Leu Cys Cys Ile Asp Asn Val Val Phe Leu Ser Glu Ile Phe Leu
                 85                  90                  95
Pro Phe Ile Leu Pro Gly Ile Leu Ser Leu Leu Pro Ile Ala Leu Leu
            100                 105                 110
Leu Arg Leu Ala Trp Lys Glu Gln Lys Leu Ala Ala Gln Lys Gln Gln
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        115                 120                 125
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145                 150                 155                 160
Ser Glu Ile Leu Pro Ser Gly Phe Ser Lys Arg Phe Lys Phe Ala Val
                165                 170                 175
Leu Thr Gln Ala Lys Pro Ser Leu Leu Thr Lys Lys Ile Gln Leu Thr
            180                 185                 190
Lys Thr Pro Phe Asp Glu Thr Ile Glu Thr Ala Phe Ser His Ile Arg
        195                 200                 205
Glu Gly Leu Tyr Leu Ser Glu Ser Glu Gln Arg Asp His Asp Lys Lys
    210                 215                 220
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225                 230                 235
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Trp Leu Phe Phe Thr Pro Asn Ile Leu Asn Tyr Leu Asp Ser Ser Val
         35                  40                  45
Ile Leu Ser Asp Lys Ile Cys Gly Val Leu Leu Ile Leu Leu Ser Ala
     50                  55                  60
Leu Ser Phe Tyr Asn Pro Val Ile Leu Gln Leu Gly Ile Phe Ile Gly
 65                  70                  75                  80
Leu Trp Val Ser Phe Phe Ser Cys Ser Ser Asp Leu Leu Pro Leu Val
                85                  90                  95
Phe Ala His Asp Ser Leu Leu Gly Phe Ala Thr Leu Ala Ile Ile Phe
            100                 105                 110
Leu Ile Pro Asn Arg Pro Glu Asp Leu Glu Val Gly Pro Thr Ile Pro
        115                 120                 125
Glu Thr Cys His Tyr Asn Pro Ser Ser Gly Gly Lys Arg Ala Ala Val
    130                 135                 140
Leu Ile Phe Ala Phe Val Gly Trp Leu Gln Ser Arg Tyr Leu Thr Ser
145                 150                 155                 160
Ala Ala Leu Asn Ile Ala Asp Ala Asp Thr Ser Cys Ser Leu Phe Phe
                165                 170                 175
Ser Ser Thr Leu Met Val Ile Tyr Ser Met Leu Ile Val Leu Ser Leu
            180                 185                 190
Thr Gly Gly Glu Arg Arg Trp His Thr Gln Pro Lys Val Val Phe Ile
        195                 200                 205
Thr Ala Ile Leu Leu Phe Ile Ala Ile Gly Leu Thr Leu Ala Ala Ile
    210                 215                 220
Leu Leu Ser Gln Leu Phe Leu Thr Asn Tyr Glu Gly Val Cys Leu Thr
225                 230                 235                 240
Val Ala Pro Val Phe Ser Leu Ala Phe Phe Tyr Asp Glu Ile Arg Ala
                245                 250                 255
Thr Trp Asn Tyr Leu Ser Gln Asn Tyr Ser Asn Arg Lys Gln Leu Ala
            260                 265                 270
Ile Thr Ala Phe Tyr Gly Ser Glu Tyr Tyr Lys Glu Ser Leu Phe Trp
        275                 280                 285
Glu Glu Arg Ser Val Leu Pro Phe Ser Gln Ala Cys Lys Gln Ala Phe
    290                 295                 300
Ala Gly Leu Ser Phe Pro Leu Asn Leu Ile Phe Ala Cys Ile Phe Ser
305                 310                 315                 320
Ile Phe Phe Val Gln Leu Asn Val Asn Leu Ser Ile Pro Asp Thr Cys
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Arg Phe Phe Val Asn Ser Ala Cys Trp Phe Ile Leu Val Leu Ser Ile
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Phe Ser Phe Ala Glu Ser Leu Arg His Leu Arg Trp Leu Ser Leu Leu
355 360 365
Phe Ala Ala Gly Ile Ile Leu Ser Pro Val Ile Phe His Leu Pro Leu
370 375 380
Glu Ala Ser Thr Leu Leu Ser Ile Ile Val Ser Gly Ile Ala Phe Ile
385 390 395 400
Ile Leu Ser Met Gly Arg Leu
405

<210>274
<211>282
<212>PRT
<213>Chlamydia trachomatis
<400>274
Leu Ser Phe Leu Thr His Lys Lys Ser Glu Arg Lys Glu Lys Val Phe
1 5 10 15
Phe Asn Lys Glu Ala Ser Phe Ile Ser Ala Arg Lys Arg Phe Arg Phe
20 25 30
Phe Tyr Phe Cys Leu Ile Ser Ile Leu Asn Gly Arg Met Asp Thr Arg
35 40 45
Thr Pro Leu Arg Lys Lys Ile Leu Ile Ile Ser Thr Ala Leu Gly Phe
50 55 60
Val Leu Cys Val Gly Leu Met Ile His Thr Lys Arg Ser Ile Met Pro
65 70 75 80
Pro Lys Thr His Ile Pro Thr Thr Ala Lys Tyr Phe Pro Thr Ile Gly
85 90 95
Asp Pro Tyr Ala Pro Ile Asn Ile Thr Val Phe Glu Glu Pro Ser Cys
100 105 110
Ser Ala Cys Glu Glu Phe Ser Ser Glu Val Phe Pro Leu Ile Lys Lys
115 120 125
His Phe Val Asp Thr Gly Glu Ala Ser Leu Thr Leu Val Pro Val Cys
130 135 140
Phe Ile Arg Gly Ser Met Pro Ala Ala Gln Ala Leu Leu Cys Val Tyr
145 150 155 160
His His Asp Pro Lys Arg Pro Asp Pro Glu Ala Tyr Met Glu Tyr Phe
165 170 175
His Arg Ile Leu Thr Tyr Lys Lys Thr Lys Gly Ser His Trp Ala Thr
180 185 190
Pro Glu Val Leu Ala Lys Leu Ala Glu Lys Ile Pro Thr His Ser Gly
195 200 205
Arg Glu Ile Asn Pro Lys Gly Leu Ile Gln Cys Ile Asn Ser Gln Arg
210 215 220
Phe Thr Glu Gln Leu Lys Lys Asn Asn Ile Tyr Gly Ser Gln Ile Met
225 230 235 240
Gly Gly Gln Leu Ala Thr Pro Thr Ala Val Val Gly Asp Tyr Leu Ile
245 250 255
Glu Asp Pro Thr Phe Asp Glu Ile Glu Arg Val Ile Thr Gln Leu Arg
260 265 270
His Leu Gln Ala Ile Glu Glu Glu Val Arg
275 280

<210>275
<211>529
<212>PRT
<213>Chlamydia trachomatis
<400>275
Met His His Arg Lys Phe Leu Ala Val Ser Ile Ala Phe Val Ser Leu
1 5 10 15
Ala Phe Gly Leu Thr Ser Cys Tyr His Gln Lys Glu Glu Pro Lys Asp
20 25 30

```
Val Leu Arg Ile Ala Ile Cys His Asp Pro Met Ser Leu Asp Pro Arg
          35                  40                  45
Gln Val Phe Leu Ser Lys Asp Val Ser Ile Val Lys Ala Leu Tyr Glu
      50                  55                  60
Gly Leu Val Arg Glu Lys Glu Ala Ala Phe Gln Leu Ala Leu Ala Glu
 65                  70                  75                  80
Arg Tyr His Gln Ser Asp Asp Gly Cys Val Tyr Thr Phe Phe Leu Lys
                 85                  90                  95
Asn Thr Phe Trp Ser Asn Gly Asp Val Val Thr Ala Tyr Asp Phe Glu
            100                 105                 110
Glu Ser Ile Lys Gln Ile Tyr Phe Arg Glu Ile Asp Asn Pro Ser Leu
        115                 120                 125
Arg Ser Leu Ala Leu Ile Lys Asn Ser His Ala Val Leu Thr Gly Ala
    130                 135                 140
Leu Pro Val Glu Asp Leu Gly Val Arg Ala Leu Asn Ala Lys Ser Leu
145                 150                 155                 160
Glu Ile Val Leu Glu Asn Pro Phe Pro Tyr Phe Leu Glu Ile Leu Ala
                165                 170                 175
His Pro Val Phe Tyr Pro Val His Thr Ser Leu Arg Glu Tyr Tyr Lys
            180                 185                 190
Asp Lys Arg Asn Lys Arg Val Phe Pro Met Ile Ser Asn Gly Pro Phe
        195                 200                 205
Ala Ile Gln Cys Tyr Glu Pro Gln Arg Tyr Leu Leu Ile Asn Lys Asn
    210                 215                 220
Pro Leu Tyr His Ala Lys His Asp Val Leu Leu Asn Ser Val Cys Leu
225                 230                 235                 240
Gln Ile Val Pro Asp Ile His Thr Ala Met Gln Leu Phe Gln Lys Asn
                245                 250                 255
His Ile Asp Leu Val Gly Leu Pro Trp Ser Ser Ser Phe Ser Leu Glu
            260                 265                 270
Glu Gln Arg Asn Leu Pro Arg Glu Lys Leu Phe Asp Tyr Pro Val Leu
        275                 280                 285
Ser Cys Ser Val Leu Phe Cys Asn Ile His Gln Thr Pro Leu Asn Asn
    290                 295                 300
Pro Ser Leu Arg Thr Ala Leu Ser Leu Ala Ile Asn Arg Glu Thr Leu
305                 310                 315                 320
Leu Lys Leu Ala Gly Lys Gly Cys Ser Ala Thr Ser Phe Val His Pro
                325                 330                 335
Gln Leu Ser Gln Ile Pro Ala Thr Thr Leu Ser Gln Asp Glu Arg Ile
            340                 345                 350
Ala Leu Ala Lys Gly Tyr Leu Thr Glu Ala Leu Lys Thr Leu Ser Gln
        355                 360                 365
Glu Asp Leu Glu Lys Ile Thr Leu Ile Tyr Pro Ile Glu Ser Val Cys
    370                 375                 380
Leu Arg Ala Val Val Gln Glu Ile Arg Gln Gln Leu Phe Asp Val Leu
385                 390                 395                 400
Gly Phe Lys Ile Ser Thr Leu Gly Leu Glu Tyr His Cys Phe Leu Asp
                405                 410                 415
Lys Arg Ser Arg Gly Glu Phe Ser Leu Ala Thr Gly Asn Trp Ile Ala
            420                 425                 430
Asp Tyr His Gln Ala Ser Ala Phe Leu Ser Val Leu Gly Asn Gly Thr
        435                 440                 445
Arg Tyr Lys Asp Phe Gln Leu Ile Asn Trp Gln Asn Gln Lys Tyr Thr
    450                 455                 460
Asn Ile Val Ala Gln Leu Leu Ile Gln Glu Ser Ser Asp Leu Gln Leu
465                 470                 475                 480
Met Ala Glu Gln Leu Leu Leu Lys Glu Ser Pro Leu Ile Pro Leu Tyr
                485                 490                 495
His Leu Asp Tyr Val Tyr Ala Lys Gln Pro Arg Val Ser Asp Leu Gln
            500                 505                 510
Thr Ser Ser Leu Gly Glu Ile Asp Leu Lys Arg Val Ser Leu Ala Glu
```

Sequence Listing

515 520 525
Gly

<210>276
<211>183
<212>PRT
<213>Chlamydia trachomatis
<400>276
Ile Ile Thr Thr Leu Phe Val Lys Thr Ser Met Phe Phe Leu Ala Lys
1 5 10 15
Arg Leu Val Gln Leu Asn Lys Asn Pro Phe Leu Leu Lys Lys Phe Ser
20 25 30
Glu Thr Thr Val Leu Phe Ile Phe Glu Arg Gln Leu Lys Met Trp Glu
35 40 45
Gly Tyr Ser Ile Asp Glu Asn Asn Tyr Ile Ser Asp Tyr Asn Met Glu
50 55 60
Phe Gly Arg Pro Leu Leu Gln Lys Leu Ala Asn Pro Val Cys Lys Ala
65 70 75 80
Leu Leu Gln Lys Gln Leu Glu Ala Glu Gln Ala Met Thr Leu Ser Asn
85 90 95
Gln Val Thr Val Gly Asp Ile Val Leu Met Arg Ser Pro Ile Phe Glu
100 105 110
Lys Ser Val Leu Leu Glu Ala Leu Ile Asn Glu Ile Ile Tyr Gln Glu
115 120 125
Ser Leu Phe Leu Phe Lys Lys Pro Glu Asn Cys Ser Met Ser Glu Asp
130 135 140
Glu Phe Arg Ala Arg Cys Thr Arg Asn Leu Val Glu Asp Leu Phe Asp
145 150 155 160
Gly Leu Met Asn Leu Trp Val Gln Ile Lys Leu Ile Lys Gly Tyr Asp
165 170 175
Ser Met Gln Asp Tyr Gln Glu
180
<210>277
<211>253
<212>PRT
<213>Chlamydia trachomatis
<400>277
Met Ser Lys Leu Thr Gln Val Phe Lys Gln Thr Lys Pro Cys Ile Gly
1 5 10 15
Tyr Leu Thr Ala Gly Asp Gly Gly Thr Ser Tyr Thr Ile Glu Ala Ala
20 25 30
Lys Ala Leu Ile Gln Gly Gly Val Asp Ile Leu Glu Leu Gly Phe Pro
35 40 45
Phe Ser Asp Pro Val Ala Asp Asn Pro Glu Ile Gln Val Ser His Asp
50 55 60
Arg Ala Leu Ala Glu Asn Leu Thr Ser Glu Thr Leu Leu Glu Ile Val
65 70 75 80
Glu Gly Ile Arg Ala Phe Asn Gln Glu Val Pro Leu Ile Leu Tyr Ser
85 90 95
Tyr Tyr Asn Pro Leu Leu Gln Arg Asp Leu Asp Tyr Leu Arg Arg Leu
100 105 110
Lys Asp Ala Gly Ile Asn Gly Val Cys Val Ile Asp Leu Pro Ala Pro
115 120 125
Leu Ser His Gly Glu Lys Ser Pro Phe Phe Glu Asp Leu Leu Ala Val
130 135 140
Gly Leu Asp Pro Ile Leu Leu Ile Ser Ala Gly Thr Thr Pro Glu Arg
145 150 155 160
Met Ser Leu Ile Gln Glu Tyr Ala Arg Gly Phe Leu Tyr Tyr Ile Pro
165 170 175
Tyr Glu Ala Thr Arg Asp Ser Glu Val Gly Ile Lys Glu Glu Phe Arg
180 185 190

Substitute Sheet (Rule 26)

```
Lys Val Arg Glu His Phe Asp Leu Pro Ile Val Asp Arg Arg Asp Ile
        195                 200                 205
Cys Asp Lys Lys Glu Ala Ala His Val Leu Asn Tyr Ser Asp Gly Phe
    210                 215                 220
Ile Val Lys Thr Ala Phe Val His Gln Thr Thr Met Asp Ser Ser Val
225                 230                 235                 240
Glu Thr Leu Thr Ala Leu Ala Gln Thr Val Ile Pro Gly
                245                 250
```

<210>278
<211>337
<212>PRT
<213>Chlamydia trachomatis
<400>278

```
Leu Lys Leu Arg Ile Leu Leu Gly Ala Ile Asp Gly Pro Arg Val Phe
  1               5                  10                  15
Leu Lys Arg Glu Asp Leu Leu His Thr Gly Ala His Lys Leu Asn Asn
            20                  25                  30
Ala Leu Gly Gln Cys Leu Leu Ala Lys Tyr Leu Gly Lys Thr Arg Val
        35                  40                  45
Val Ala Glu Thr Gly Ala Gly Gln His Gly Val Ala Thr Ala Thr Ala
    50                  55                  60
Cys Ala Tyr Leu Gly Leu Asp Cys Val Val Tyr Met Gly Ala Lys Asp
65                  70                  75                  80
Val Glu Arg Gln Lys Pro Asn Val Glu Lys Met Arg Phe Leu Gly Ala
                85                  90                  95
Glu Val Val Ser Val Thr Lys Gly Ser Cys Gly Leu Lys Asp Ala Val
            100                 105                 110
Asn Gln Ala Leu Gln Asp Trp Ala Thr Thr His Ser Phe Thr His Tyr
        115                 120                 125
Cys Leu Gly Ser Ala Leu Gly Pro Leu Pro Tyr Pro Asp Ile Val Arg
    130                 135                 140
Phe Phe Gln Ser Val Ile Ser Ala Glu Val Lys Glu Gln Ile His Ala
145                 150                 155                 160
Val Ala Gly Arg Asp Pro Asp Ile Leu Ile Ala Cys Ile Gly Gly Gly
                165                 170                 175
Ser Asn Ala Ile Gly Phe Phe His His Phe Ile Pro Asn Pro Lys Val
            180                 185                 190
Gln Leu Ile Gly Val Glu Gly Gly Gly Leu Gly Ile Ser Ser Gly Lys
        195                 200                 205
His Ala Ala Arg Phe Ala Thr Gly Arg Pro Gly Val Phe His Gly Phe
    210                 215                 220
Tyr Ser Tyr Leu Leu Gln Asp Asp Asp Gly Gln Val Leu Gln Thr His
225                 230                 235                 240
Ser Ile Ser Ala Gly Leu Asp Tyr Pro Ser Val Gly Pro Asp His Ala
                245                 250                 255
Glu Met His Glu Ser Gly Arg Ala Phe Tyr Thr Leu Ala Thr Asp Glu
            260                 265                 270
Glu Ala Leu Arg Ala Phe Phe Leu Leu Thr Arg Asn Glu Gly Ile Ile
        275                 280                 285
Pro Ala Leu Glu Ser Ser His Ala Leu Ala His Leu Val Ser Ile Ala
    290                 295                 300
Pro Ser Leu Pro Lys Glu Gln Ile Val Ile Val Asn Leu Ser Gly Arg
305                 310                 315                 320
Gly Asp Lys Asp Leu Pro Gln Ile Ile Arg Arg Asn Arg Gly Ile Tyr
                325                 330                 335
Glu
```

<210>279
<211>103
<212>PRT
<213>Chlamydia trachomatis

Sequence Listing

<400>279
Tyr Tyr Ser Ile Thr Lys Arg Cys Asp Met Lys Asn Gln Glu Glu Ser
1 5 10 15
Gly Trp Gln Ala Phe Leu Thr Leu Cys Ser Lys Met Gln Lys Glu Lys
20 25 30
Phe Leu Gln Asp Leu Phe Ser Leu Phe Leu Ser Phe Gly Glu Arg Lys
35 40 45
Asp Val Ala Ser Arg Tyr His Ile Ile Arg Ala Leu Leu Glu Gly Glu
50 55 60
Leu Thr Gln Arg Glu Ile Ala Glu Lys Tyr Gly Val Ser Ile Ala Gln
65 70 75 80
Ile Thr Arg Gly Ser Asn Ala Leu Lys Gly Ser Asp Pro Gln Phe Lys
85 90 95
Glu Phe Leu Gln Lys Glu Ile
100
<210>280
<211>106
<212>PRT
<213>Chlamydia trachomatis
<400>280
Leu Pro Ser Glu Ala Cys Met Ser Leu Asp Thr Ala Gly Lys Pro His
1 5 10 15
Trp Lys Ile Pro Glu Gly Phe Leu Gln Phe Ala Phe Ala Tyr Tyr Arg
20 25 30
Ser Trp Val Glu His Trp Val Lys Lys Ser Leu Arg Arg Gly Ser Leu
35 40 45
Ile Gln Leu Pro Ala Arg Ser Ile Gln Val Ser Leu Ile Thr Thr Gln
50 55 60
Thr Gly Tyr Phe Ala Arg Gln Asn Arg Arg Gly Gly Phe Gln Val Phe
65 70 75 80
Tyr Ser Ile Tyr Gly Leu Glu Gly Lys Val Gln Pro His Gln Ala Pro
85 90 95
Gly Asp Met Leu Cys Asp Ile Thr Glu Asp
100 105
<210>281
<211>514
<212>PRT
<213>Chlamydia trachomatis
<400>281
Ser Glu Gly Leu Glu Met Phe Val Ser Phe Asp Lys Ser Arg Cys Arg
1 5 10 15
Ala Asp Val Pro Asp Phe Phe Glu Arg Thr Gly Asn Phe Leu Leu His
20 25 30
Cys Val Ala Arg Gly Ile Asn Val Leu Tyr Arg Val Lys Gln Ile Pro
35 40 45
Asn Tyr Pro Ser Cys Tyr Phe Ser His Lys Glu Ile Ser Cys Cys Arg
50 55 60
Arg Ile Ala Asn Ile Val Ile Cys Ile Leu Thr Gly Pro Leu Met Leu
65 70 75 80
Leu Ala Thr Val Leu Gly Leu Leu Ala Tyr Arg Phe Ser Ser Thr Tyr
85 90 95
Gln Thr Ser Leu Gln Glu Arg Phe Arg Tyr Lys Tyr Glu Gln Lys Gln
100 105 110
Ala Leu Asp Glu Tyr Arg Asp Arg Glu Glu Lys Val Ile Thr Leu Gln
115 120 125
Lys Phe Cys Arg Gly Phe Leu Val Arg Asn His Leu Leu Asn Gln Glu
130 135 140
Thr Leu Thr Thr Cys Lys Gln Trp Gly Gln Lys Leu Leu Glu Gly Glu
145 150 155 160
Lys Phe Pro Arg Val Pro Glu Gly Arg Ser Leu Val Tyr Ile Ser Lys
165 170 175

```
Gln Phe Pro Ser Leu Val Glu Asn Phe Leu Phe Glu Glu Lys Leu Pro
            180                 185                 190
Val Ser Arg Ile Ser Val Asp Ser Met Cys Leu Tyr Lys Glu Asn Pro
        195                 200                 205
Gln Ala Phe Asp Glu Ala Ile Lys Glu Leu Leu Phe Leu Phe Lys Glu
    210                 215                 220
Val His Phe Arg Asp Phe Val Val Glu Thr Glu Ser Pro Thr Asp Asp
225                 230                 235                 240
Phe Pro Leu Ala Val Lys Val His Asn Tyr Trp Val Cys Pro Arg Tyr
                245                 250                 255
Asp Asn Leu Pro Leu Phe Ile Gln Glu Gly Lys Asp Gly Ser Pro Glu
            260                 265                 270
Gly Arg Ile Gly Leu Val Asp Leu Glu Thr Phe Ser Trp Ser Pro His
        275                 280                 285
Pro Cys Pro Val Glu Glu Leu Ala Val Met Phe Pro Met Ser Lys Glu
    290                 295                 300
Leu Leu Met Thr Glu Ala Lys Lys Leu Gln Ile Pro Phe Ser Thr Lys
305                 310                 315                 320
Glu Val Glu Arg Ser Val Glu Lys Gly Leu Ala Phe Phe Glu His Met
                325                 330                 335
Leu Gly His Pro Asp Phe Cys Ser Gln Lys Ser Val Thr Pro Leu Arg
            340                 345                 350
Asn Cys Ala Pro Tyr Leu His Leu Glu Val Trp Arg Phe Ser Leu Lys
        355                 360                 365
Ile Phe Asp Ile Leu Lys Ala Ala Ile Arg Leu Asn Gly Ala Leu Asn
    370                 375                 380
Val Leu Leu Ser Pro Asp Ile Arg Glu Arg Leu Ser Ala Ile Ser Asp
385                 390                 395                 400
Lys Gln Trp Leu Ala Ile Ser Ser Gln Val Thr Ser Ser Leu Leu Glu
                405                 410                 415
Gln Val Ser Thr Asn Ile Tyr Gln Ser His Thr Glu Glu Ala Lys Arg
            420                 425                 430
Val Asn Ser Ser Gly Thr Phe Ile Met Cys Arg Ser Pro Ile Phe Arg
        435                 440                 445
Lys Ser Ile Phe Ile Lys Asn Leu Pro Glu Leu Leu Asn Lys Lys Leu
    450                 455                 460
Gln Leu Leu Pro Glu Glu Lys Glu Ile Ser Glu Ala Leu Ala Ser Leu
465                 470                 475                 480
Cys Leu Arg Ala Val Met Glu Glu Leu Val Ala Thr Gly Asn Ile Tyr
                485                 490                 495
Ser Tyr Asp Ser Met Asp Asp Phe Phe Glu Gly Gln Tyr Cys Arg Ile
            500                 505                 510
Arg Tyr
```

<210>282
<211>112
<212>PRT
<213>Chlamydia trachomatis
<400>282

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Lys Ile His Lys Lys Ile Lys Lys Cys Leu Thr Thr Thr Leu Leu Pro
  1               5                  10                  15
Asn Leu Phe Ser Leu Phe Thr Asn Arg Asn Arg Glu Thr Leu Met Ile
            20                  25                  30
Val Thr Phe Asp Lys Tyr Leu Ala Pro Glu Leu Gly Pro Asp Pro Leu
        35                  40                  45
Glu Arg Leu Gly Asn Val Leu Leu Tyr Pro Ile Ile Arg Gly Phe Gly
    50                  55                  60
Ser Leu Val Ser Val Lys Thr Leu Gly Glu Lys Arg Phe Leu Cys Phe
65                  70                  75                  80
Ser Asp Lys Val Val Ser Leu Cys Val Asn Ala Phe Phe Val Trp Tyr
                85                  90                  95
```

```
Ala Ile Phe Ser Gln His Leu Leu Arg Val Cys Ser Leu Cys Glu Gly
            100                 105                 110
<210>283
<211>286
<212>PRT
<213>Chlamydia trachomatis
<400>283
Arg Pro Ile Lys Leu His Glu Leu Phe Leu Ile Val Leu Leu Lys Arg
  1               5                  10                  15
Glu Thr Arg Leu Arg Ser Leu Ser Lys Asn Asn Ala Pro Pro Leu Ser
            20                  25                  30
Leu Tyr Lys Asn Ile Tyr Val Ala Arg Lys Pro Leu Val Asp Arg Asp
        35                  40                  45
His Phe Pro Lys Tyr Arg Thr Ile Cys Asp Ala Ile Met Glu Gly Asn
    50                  55                  60
Leu Glu Asn Ile Arg Phe Ser Asp Lys Thr Gly Glu Ser Val Tyr Ser
65                  70                  75                  80
Ser Lys Glu Leu Pro Ser Val Leu Phe Lys Arg Ile Gly Gln Lys Asn
                85                  90                  95
Ala Lys Gln Arg Val Leu Asn Asn Ile Ala Leu Asn Ala Tyr Leu Ala
            100                 105                 110
Lys Thr Gly Val Asp Gly Leu Gln Val Leu Ser Ala Ser Thr Tyr Lys
        115                 120                 125
Asp Phe Leu Ile Glu Asp Lys Pro Phe Gly Lys Gly Ala Leu Asp Thr
    130                 135                 140
Leu Ile Ala Tyr Arg Leu Asn Pro Ser Leu Phe Asp Arg Ala Val Lys
145                 150                 155                 160
Ser Leu Cys Lys Leu Phe Ser Phe Tyr His Cys Pro Asp Leu Phe Val
                165                 170                 175
Lys Ser Gly Asp Leu Leu Lys Asp Ser Pro His Ser Lys Leu Leu Leu
            180                 185                 190
Gly Phe Lys Glu Asn Asn Glu Ser Leu Ala Ala Glu Ser Ala Thr Leu
        195                 200                 205
Gln Pro Ile Leu Tyr Leu Thr Gly Ile Gln Cys Ile Leu Glu Glu Pro
    210                 215                 220
Thr Pro Asp Leu Glu Ala Lys Leu Ser Ser Leu Phe Pro Tyr His Lys
225                 230                 235                 240
Thr Leu Ile Gln Gln Glu Leu Ser Lys Leu Arg Val Ser Lys Pro Lys
                245                 250                 255
Val Glu Ala Ser Lys Glu Pro Thr Pro Pro Ser Thr Tyr Asp Glu Arg
            260                 265                 270
Leu Lys Ser Ser Pro Pro Thr Glu Met Glu Asn Phe Tyr Asp
        275                 280                 285
<210>284
<211>167
<212>PRT
<213>Chlamydia trachomatis
<400>284
Lys Ala Leu Pro Leu Gln Lys Trp Lys Ile Phe Met Thr Glu Gln Pro
  1               5                  10                  15
His Arg Leu Ser Glu Glu Ala Arg Ser Ile Ala Asn Glu Ala Lys Glu
            20                  25                  30
Arg Leu Leu Lys Leu Asn Asp Lys Pro Glu Leu Ser Arg Pro Tyr Leu
        35                  40                  45
Val Lys Gly Phe Leu Ser Lys Ile Ser Arg Gly Ile Ser Asp Lys Glu
    50                  55                  60
Ala Ala Ser Lys Phe Ser Lys Ala Ile Val Thr Ser Leu Leu Gly Tyr
65                  70                  75                  80
Leu Trp Asn His Ile Leu Gln Asn Lys Glu Arg Ile Leu Ser Ala Asp
                85                  90                  95
Ala Arg Asp Leu Glu Ala His Ser Ala Leu Leu Asp Thr Lys Glu Ile
```

```
            100                 105                 110
Leu Ala Leu Cys Lys Tyr Phe Ala Ile Asn Arg Cys Thr Trp Leu Ser
        115                 120                 125
Ser Ser Ser Thr Gln Glu Glu Glu Asn Leu Ile Cys Gln Asp Ile Ala
    130                 135                 140
Lys Glu Met Phe Ser Ser Leu Tyr Met Leu Leu Trp Asn Asn Ser Gly
145                 150                 155                 160
Ser Glu Asp Met Ile Phe Gln
                165
<210>285
<211>107
<212>PRT
<213>Chlamydia trachomatis
<400>285
Ser Lys Thr Phe Arg Arg Arg Lys Lys Ser Phe Phe Phe Ser Met Ser
  1               5                  10                  15
Val Asn Arg Asn His Asn Asn Phe Pro Pro Tyr Gly Glu Asn Glu Thr
            20                  25                  30
Pro Pro Pro Glu Ser Gln Pro Thr Asp Gly Pro Glu Asp Pro Ser Met
        35                  40                  45
Gln Gly Ala Tyr Tyr Ile Ala Pro Glu Asp Leu Pro Gln His Gln Leu
    50                  55                  60
Ala Ala Ala Val Glu Gly Leu His Ile Gly Ser Thr Leu Asn Pro Thr
65                  70                  75                  80
Ala Pro Glu Phe Thr Pro Gly Ala Val Ser His His Phe Glu Thr Phe
                85                  90                  95
Thr Pro Ser Phe Pro Pro Ala Pro Gln Gln Pro
            100                 105
<210>286
<211>406
<212>PRT
<213>Chlamydia trachomatis
<400>286
Ala Val Leu Asp Pro Tyr Ala Thr Tyr Pro Tyr Gly Val Gln Ser Pro
  1               5                  10                  15
Tyr Leu Glu Tyr Ala Pro Pro Ala Val Val Gln Glu Pro Tyr Thr Thr
            20                  25                  30
Thr Gly Gln Gln Gly Leu Ser Ser Tyr Pro Glu Ala Ala Pro Gln Pro
        35                  40                  45
Pro Ala Leu Gln Gln Pro Glu Ser Leu Pro Gln Ala Thr Ala Arg Asp
    50                  55                  60
Arg Gly Asp Leu Glu Lys Glu Ala Asn Asn Thr Asn Ser Phe Ala Thr
65                  70                  75                  80
Gln Ala Ile Glu Thr Thr Pro Ser Asn Ile Ser Pro Cys Phe Asn Leu
                85                  90                  95
His Gly Glu Ala Ile Gln Leu Phe Ser Thr Glu Ser Gly Pro Ser Pro
            100                 105                 110
Leu Arg Ala Ile Leu Gln Ala Ile Lys Gln Ala Lys Tyr His Ile Tyr
        115                 120                 125
Ile Gln Ile Tyr Arg Phe Thr Ser Glu Glu Ile Ala Ala Ala Leu Leu
    130                 135                 140
Glu Arg Ala Asn Asn Gly Val Arg Ile His Tyr Asn Ile Asn Thr Ser
145                 150                 155                 160
Ala Ala Gln Lys Pro Leu Phe Asp Ile Leu Thr Cys Lys Phe Lys Ala
                165                 170                 175
Thr Asn Gln Ala Arg Leu His Cys Lys Asn Ile Val Val Asp Gly Ser
            180                 185                 190
Leu Val Ile Thr Gly Ser Ala Asn Phe Ser Asp Ala Ala Phe Ser Arg
        195                 200                 205
Asp Ile Asn Leu Val Ala Ile Ile Arg Asn Pro Ser Leu Gly Gln Leu
    210                 215                 220
```

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Val Val Ser Gln Gln Ser Gly Trp Ile Thr Gly Gly Ser Gln Gln Ile
225 230 235 240
Glu Tyr Cys Ser Leu Tyr Cys His Asn His Gln Gly Val Asp Glu Val
245 250 255
Val Lys Ala Val Gln Ser Ala Val Lys Thr Ile Arg Val Ala Met Leu
260 265 270
Val Leu Ser His Glu Glu Val Leu His Ala Leu His Gln Ala Ala Gln
275 280 285
Arg Gly Val Glu Val Thr Val Leu Val Asn Pro His Asn Lys Ala Val
290 295 300
Leu Phe Tyr Ala Leu Gln Asp Leu Asn Ser Lys Val Lys Leu Arg Asp
305 310 315 320
Val Val Val Glu Glu Asn Ala Leu Leu His Cys Lys Val Gly Leu Ile
325 330 335
Asp Thr Asn Leu Leu Ile Thr Gly Ser Ala Asn Trp Thr Val Arg Gly
340 345 350
Leu Gln Tyr Asn Ile Glu Asp Leu Ile Phe Ile His Gln Pro Thr Pro
355 360 365
Ser Gln Leu Ser Ala Phe Phe Asn Leu Trp Glu Gln Ala Met Ser Leu
370 375 380
Ser Arg Glu Val Thr Ala Lys Lys Ile Lys Lys Ser Ala Arg Ala Gln
385 390 395 400
His Lys Tyr Asp Asp Glu
405

<210>287
<211>367
<212>PRT
<213>Chlamydia trachomatis
<400>287
Ser Leu Ile Leu Glu Asp Ala Val Ala Leu Asp Pro Pro Pro Pro Pro
1 5 10 15
Pro His Thr Ser Gln Asn Thr Pro Ser Pro Lys Asp Ser Ser Leu Val
20 25 30
Ala Arg Thr Asp Lys Ala Ala Thr Asp Ile Phe Asn Ser Ala Lys His
35 40 45
Lys Ala Ile Glu Thr Thr Lys Arg Ser Asp Gln Gln Ser Arg Ser Leu
50 55 60
Pro Ile Leu His Leu Leu Ala Ala Asp Pro Glu Pro Ile Val Phe His
65 70 75 80
Ser Thr His Gln Thr Asn His Asn Asp Pro Gln Arg Met Leu Cys Asp
85 90 95
Ala Ile Leu Gln Ala Asn Arg Ile Ile Thr Met Arg Ile Phe Asn Ile
100 105 110
Gly Ser Pro Glu Ile Ile Arg Ala Leu Ile Arg Ala Val Arg Arg Asn
115 120 125
Ile Pro Val Ile Val Ser Ala Trp Asn Phe Pro Asn Leu Ser Asn Trp
130 135 140
Asp Arg Glu Ser Lys Leu Tyr Val Glu Leu Arg Gly Asn Pro Gln Ile
145 150 155 160
Cys Leu His Lys Lys Thr Thr Leu Ile Asp Asn Gln Leu Thr Ile Ile
165 170 175
Gly Thr Ala Asn Tyr Thr Lys Ser Ser Phe Phe Lys Asp Ile Asn Leu
180 185 190
Thr Ala Leu Ile Gln Asn Pro Ala Leu Tyr Ser Leu Ile Leu Ser Gly
195 200 205
Thr Arg Gly Ser Val Ser Ile Gly Ser Gln Thr Ile Ser Tyr Tyr Pro
210 215 220
Leu Pro Phe Pro Gln Ser Asn Thr Lys Thr Leu Pro Ile Ile Gln Glu
225 230 235 240
Ile Gln Lys Ala Gln Arg Thr Ile Lys Ile Ala Met Asn Ile Phe Ser
245 250 255

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His Pro Glu Ile Phe Leu Ala Leu Glu Gln Ala Arg Leu Arg Gly Val
            260                 265                 270
Thr Ile Thr Ile Val Ile Asn Lys Lys Glu Ser Ala His Thr Leu Asp
        275                 280                 285
Ile Leu His Arg Ile Ser Ala Leu Leu Leu Leu Lys Ser Val Thr Thr
    290                 295                 300
Val Asp Ser Leu His Ala Lys Ile Cys Leu Ile Asp Asp Gln Thr Leu
305                 310                 315                 320
Ile Phe Gly Ser Pro Asn Trp Thr Tyr His Gly Met His Lys Asn Leu
                325                 330                 335
Glu Asp Leu Leu Ile Val Thr Pro Leu Thr Pro Lys Gln Ile His Ser
            340                 345                 350
Ile Gln Glu Ile Trp Ala Phe Leu Leu Lys Asn Ser Ser Pro Val
        355                 360                 365
<210>288
<211>312
<212>PRT
<213>Chlamydia trachomatis
<400>288
Met Leu Ala Gly Ser Lys Arg Lys His Lys Thr Pro Glu Asp Thr Ser
  1                 5                  10                  15
Ser Ser Ser Ser Lys Arg Ala Arg Ser Ser Ser Ser Gln Val Val Pro
             20                  25                  30
Arg Leu Leu Gln His His Glu Leu Ile Gln Leu Tyr Ser Ala His Gln
         35                  40                  45
Gln Arg Asn Asn Glu Pro Val Lys Met Ile Cys Glu Thr Ile Leu Gln
     50                  55                  60
Ala Lys Arg Ser Val Leu Leu Lys Val Phe Asn Ile Gly Ser Pro Arg
 65                  70                  75                  80
Ile Leu Ala Ala Leu Ala Glu Ala Ser Asn Arg Ala Pro Val Ser Val
                 85                  90                  95
His Tyr Gln Met Gly Pro Phe Ser Lys His Cys Thr Glu Gly Asn Val
            100                 105                 110
Gln Phe Arg Pro Arg Arg Gly Cys Ser Leu Leu His Arg Lys Thr Leu
        115                 120                 125
Leu Ile Asp Asn Asn Ile Val Val Thr Gly Thr Ala Asn Tyr Thr Glu
    130                 135                 140
Ala Ser Leu Glu Lys Asp Val Asn Leu Thr Ala Lys Ile Phe Ser Glu
145                 150                 155                 160
His Leu Tyr Arg Trp Ala Phe Arg His Asp Arg Gly Glu Val Arg Val
                165                 170                 175
Gly Ser Gln Gln Val Ser Tyr Tyr Ser Leu Ser Gln Ile Arg Arg Asp
            180                 185                 190
Leu Cys Val Lys Ala Ile Leu Glu Ala Asn Gly Ile Val Leu Arg Glu
        195                 200                 205
Arg Thr Cys Glu Gly Ile Leu His Thr Lys Val Cys Cys Ile Asp Ser
    210                 215                 220
Ser Thr Leu Ile Ile Gly Ser Val Asn Trp Ser Arg Gly Gly Leu Thr
225                 230                 235                 240
Leu Asn Leu Glu Glu Phe Leu Ile Ile Asn Pro Leu Thr Glu Thr Gln
                245                 250                 255
Leu Glu Cys Tyr Asn Glu Leu Trp Ala Tyr Ile Glu Thr Asn Ser Arg
            260                 265                 270
Leu Met Thr Lys Glu Leu Ile Gln Leu His Glu Lys Arg Lys Lys Ser
        275                 280                 285
Ile Thr Asp Pro Lys Gln Thr Ser Ser Ser Thr Gln Asp Glu Glu Asn
    290                 295                 300
Ala Ser Thr Ser Ala Glu Gln Gln
305                 310
<210>289
<211>236
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<212>PRT
<213>Chlamydia trachomatis
<400>289

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Leu Phe Ser Ser Ala Ser Pro Arg Thr Phe Thr Ser Pro Phe Phe Cys
  1               5                  10                  15
Arg Ile Ile Ser Tyr Ser Ser Val Arg Phe Lys Ser Leu Ser Ile Phe
             20                  25                  30
Thr Ala Phe Arg Gln Ser Ser Glu Ser Arg Asn Ser Pro Leu Arg Glu
         35                  40                  45
Thr Thr Gly Ser Ser Ser Arg His Arg Tyr His Arg His Gly Glu Thr
     50                  55                  60
Ser Ser Ser Ser Arg Ile Glu Thr Val Gly Ser Arg His Phe Ser Ser
 65                  70                  75                  80
Arg Arg Glu Ser Ser Arg Thr Gly Ser Arg Ser Ser Arg His Ser Glu
                 85                  90                  95
Arg Ala Arg His His Glu Ser Arg Ser His Arg His Ser Ser Ser Ser
            100                 105                 110
Arg His His Val Thr Arg Ser Gln Ser Ser Ala Leu Pro Gln Leu Gln
        115                 120                 125
Glu Arg Pro Val Pro His Pro Leu Ala Glu Arg Glu Leu Ile Thr Phe
    130                 135                 140
His Ser Val His Gln Gln Gln Asn Asn Asn Pro Leu Arg Met Ile Cys
145                 150                 155                 160
Asp Thr Ile Arg Gln Ala Gln Arg Gly Ile Phe Met Arg Ile Tyr Ala
                165                 170                 175
Ile Ser Ser Asp Asp Ile Ile Gln Ser Leu Ile Gln Thr Ser His His
            180                 185                 190
Val Pro Val Glu Val Lys Tyr His Cys Gly Glu Ser Leu Pro Val Ala
        195                 200                 205
Cys Gln Asn Ser Arg Val Val Leu Arg Pro Thr Asn Gly Arg Thr Leu
    210                 215                 220
Gln His Lys Lys Leu Cys Trp Leu Ile Ser Lys Gln
225                 230                 235
```

<210>290
<211>239
<212>PRT
<213>Chlamydia trachomatis
<400>290

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Met Leu Ala Asp Phe Gln Thr Val Val Thr Gly Ser Ala Asn Tyr Thr
  1               5                  10                  15
Asp Leu Ser Leu Asn His Asp Val Asn Val Thr Ala Cys Ile Glu Ser
             20                  25                  30
Ser Glu Leu His Asp Ala Val Phe Ser Glu Arg Pro Gln Leu Val His
         35                  40                  45
Val Gly Pro Gln Leu Leu Asn Tyr Ile Pro Ile Gln Arg Leu Ile Pro
     50                  55                  60
Asn Ala Ala Ser Lys Met Ile Leu Asn Ala Ile Asn Gln Ala Thr Asp
 65                  70                  75                  80
Ser Ile Phe Val Leu Met Tyr Ile Phe Leu Ser Pro Glu Phe Phe Leu
                 85                  90                  95
Ala Leu Ala Gln Ala Met Arg Arg Gly Val Arg Val Lys Val Ile Ile
            100                 105                 110
Asp Asn His Ser Lys Gln Asp Thr Cys Lys Leu Leu Ser Lys Leu Gly
        115                 120                 125
Ile Gln Leu Pro Leu Tyr Glu Arg Lys Thr Glu Gly Ile Leu His Thr
    130                 135                 140
Lys Ile Cys Cys Ile Asp Asn Lys Thr Pro Ile Phe Gly Ser Ala Asn
145                 150                 155                 160
Trp Ser Gly Ala Gly Met Ile Lys Asn Phe Glu Asp Leu Phe Ile Leu
                165                 170                 175
Arg Pro Ile Thr Glu Thr Gln Leu Gln Ala Phe Met Asp Val Trp Ser
```

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```
            180                 185                 190
Leu Leu Glu Thr Asn Ser Ser Tyr Leu Ser Pro Glu Ser Val Leu Thr
        195                 200                 205
Ala Pro Thr Pro Ser Ser Arg Pro Thr Gln Gln Asp Thr Asp Ser Asp
    210                 215                 220
Asp Glu Gln Pro Ser Thr Ser Gln Gln Ala Ile Arg Met Arg Lys
225                 230                 235
<210>291
<211>241
<212>PRT
<213>Chlamydia trachomatis
<400>291
Arg Leu Ser Ser Ser Ser Val Ser Leu Leu Phe Phe Lys Ala Ser Ser
  1               5                  10                  15
Phe His Tyr Arg Val Ser Ile Thr Val Gln Pro Gly Glu Phe Leu Met
            20                  25                  30
Thr Lys Pro Ser Xaa Leu Tyr Val Ile Gln Pro Phe Ser Val Phe Asn
        35                  40                  45
Pro Arg Leu Gly Arg Phe Ser Ile Asp Ser Asp Thr Tyr Ile Glu Glu
    50                  55                  60
Glu Asn Arg Leu Ala Ser Phe Ile Glu Ser Leu Pro Leu Glu Ile Phe
65                  70                  75                  80
Asp Ile Pro Ser Phe Met Glu Thr Ala Ile Ser Asn Ser Pro Tyr Ile
                85                  90                  95
Leu Ser Trp Glu Thr Thr Lys Asp Gly Ala Leu Phe Thr Ile Leu Glu
            100                 105                 110
Pro Lys Leu Ser Ala Cys Ala Ala Thr Cys Leu Val Ala Pro Ser Ile
        115                 120                 125
Gln Met Lys Ser Asp Ala Glu Leu Leu Glu Glu Ile Lys Gln Ala Leu
    130                 135                 140
Leu Arg Ser Ser His Asp Gly Val Lys Tyr Arg Ile Thr Arg Glu Ser
145                 150                 155                 160
Phe Ser Pro Glu Lys Lys Thr Pro Lys Val Ala Leu Val Asp Asn Asp
                165                 170                 175
Ile Glu Leu Ile Arg Asn Val Asp Phe Leu Gly Arg Ala Val Asp Ile
            180                 185                 190
Val Lys Leu Asp Pro Ile Asn Ile Leu Asn Thr Val Ser Glu Glu Asn
        195                 200                 205
Ile Leu Asp Tyr Ser Phe Thr Arg Glu Thr Ala Gln Leu Ser Ala Asp
    210                 215                 220
Gly Arg Phe Gly Ile Pro Pro Gly Thr Lys Leu Phe Ser Lys Pro Ser
225                 230                 235                 240
Phe

<210>292
<211>508
<212>PRT
<213>Chlamydia trachomatis
<400>292
Lys Pro Asn Pro His Arg Gly Lys Arg Pro Ser Arg Leu Thr Arg Ile
  1               5                  10                  15
His Arg Ile Glu Val Gln Leu Pro Asp Ser Ser Arg Ile Pro Tyr Asp
            20                  25                  30
Cys Ser Cys Ile Asn Arg Tyr Gly Ile Phe Pro Arg Phe Asn Pro Asn
        35                  40                  45
Gln Asn Lys Leu Asn Val Ile Arg Lys Ile Lys Ser Gly Phe Gln Arg
    50                  55                  60
Ser Leu Asp Asp Tyr His Ile Tyr Gln Ile Glu Arg Lys Xaa Xaa Phe
65                  70                  75                  80
Ser Phe Ser Pro Lys His Arg Ser Leu Ser Ser Thr Ser His Ser Glu
                85                  90                  95
```

```
Asp Ser Asp Leu Asp Leu Ser Glu Ala Ala Ala Phe Ser Gly Ser Leu
            100                 105                 110
Thr Cys Glu Phe Val Lys Lys Ser Thr Gln His Ala Lys Asn Thr Val
        115                 120                 125
Thr Cys Ser Thr Ala Ala His Ser Leu Tyr Thr Leu Lys Glu Asp Asp
    130                 135                 140
Ser Ser Asn Pro Ser Glu Lys Arg Leu Glu Asn Cys Phe Arg Asn Trp
145                 150                 155                 160
Ile Asp Asn Lys Leu Ser Ala Asn Ser Pro Asp Ser Trp Ser Ala Phe
                165                 170                 175
Ile Gln Lys Phe Gly Thr His Tyr Ile Ala Ser Ala Thr Phe Gly Gly
            180                 185                 190
Ile Gly Phe Gln Val Leu Lys Leu Ser Phe Glu Gln Val Glu Asp Leu
        195                 200                 205
His Ser Lys Lys Ile Ser Leu Glu Thr Ala Ala Ala Asn Ser Leu Leu
    210                 215                 220
Lys Gly Ser Val Ser Ser Ser Thr Glu Ser Gly Tyr Ser Ser Tyr Ser
225                 230                 235                 240
Ser Thr Ser Ser Ser His Thr Val Phe Leu Gly Gly Thr Val Leu Pro
                245                 250                 255
Ser Val His Asp Glu Arg Leu Asp Phe Lys Asp Trp Ser Glu Ser Val
            260                 265                 270
His Leu Glu Pro Val Pro Ile Gln Val Ser Leu Gln Pro Ile Thr Asn
        275                 280                 285
Leu Leu Val Pro Leu His Phe Pro Asn Ile Gly Ala Ala Glu Leu Ser
    290                 295                 300
Asn Lys Arg Glu Ser Leu Gln Gln Ala Ile Arg Val Tyr Leu Lys Glu
305                 310                 315                 320
His Lys Val Asp Glu Arg Gly Glu Arg Thr Thr Phe Thr Ser Gly Ile
                325                 330                 335
Asp Asn Pro Ser Ser Trp Phe Thr Leu Glu Ala Ala His Ser Pro Leu
            340                 345                 350
Val Val Ser Thr Pro Tyr Val Ala Ser Trp Ser Thr Leu Pro Tyr Leu
        355                 360                 365
Phe Pro Thr Leu Arg Glu Arg Ser Ser Ala Thr Pro Ile Val Phe Tyr
    370                 375                 380
Phe Cys Val Asp Asn Asn Glu His Ala Ser Gln Lys Ile Leu Asn Gln
385                 390                 395                 400
Ser Tyr Cys Phe Leu Gly Ser Leu Pro Ile Arg Gln Lys Ile Phe Gly
                405                 410                 415
Ser Glu Phe Ala Ser Phe Pro Tyr Leu Ser Phe Tyr Gly Asn Ala Lys
            420                 425                 430
Glu Ala Tyr Phe Asp Asn Thr Tyr Tyr Pro Thr Arg Cys Gly Trp Ile
        435                 440                 445
Val Glu Lys Leu Asn Thr Thr Gln Asp Gln Phe Leu Arg Asp Gly Asp
    450                 455                 460
Glu Val Arg Leu Lys His Val Ser Ser Gly Lys Tyr Leu Ala Thr Thr
465                 470                 475                 480
Pro Leu Lys Asp Thr His Gly Thr Leu Thr Arg Thr Thr Asn Cys Glu
                485                 490                 495
Asp Ala Ile Phe Ile Ile Lys Lys Ser Ser Gly Tyr
            500                 505
<210>293
<211>225
<212>PRT
<213>Chlamydia trachomatis
<400>293
Met Val Ile Leu Val Glu Ala Lys His Ile Ser Lys Val Ile Gln Gln
  1               5                  10                  15
Gln Asp Val Cys Ile Pro Ile Leu Lys Asp Val Ser Phe Gln Leu His
             20                  25                  30
```

Sequence Listing

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Ala Gly Glu Val Val Ala Ile Thr Gly Ala Ser Gly Ser Gly Lys Ser
          35                  40                  45
Ser Leu Leu His Leu Leu Gly Thr Leu Asp Gln Pro Ser Ser Gly Gln
      50                  55                  60
Ile Leu Phe Phe Gly Lys Gln Val Arg Arg Glu Glu Leu Pro Ile Phe
 65                  70                  75                  80
Arg Asn Cys Arg Ile Gly Phe Ile Phe Gln Asn Phe Tyr Leu Leu Glu
                 85                  90                  95
Asp Asp Ser Val Ile Asn Asn Val Leu Met Pro Ala Gln Ile Ala Arg
            100                 105                 110
Lys Asp Thr Gly Gln Lys Ser Lys Ala Arg Glu Arg Ala Leu Ala Leu
        115                 120                 125
Leu Glu Ser Val Gly Leu Val Asp Arg Arg Asp Glu Lys Gly Ser Leu
    130                 135                 140
Leu Ser Gly Gly Glu Lys Gln Arg Val Ala Ile Ala Arg Ala Leu Met
145                 150                 155                 160
Asn Asp Pro Glu Ile Val Leu Ala Asp Glu Pro Ser Gly Asn Leu Asp
                165                 170                 175
His Arg Thr Ala Asp Thr Ile His Glu Leu Leu Leu Ala Leu Ala Glu
            180                 185                 190
Lys His Arg Gly Val Leu Ile Val Thr His Asp Arg Glu Leu Ala Glu
        195                 200                 205
Lys Cys His Arg Glu Glu Ile Leu Arg Asp Gly Thr Leu Met Gln Arg
    210                 215                 220
Gln
225
<210>294
<211>215
<212>PRT
<213>Chlamydia trachomatis
<400>294
Gly Ile Gly Cys Ile His Pro Leu Gly Ile Arg Arg Leu Gly Met His
  1               5                  10                  15
Asn Gly Trp Gln Val Phe Leu Pro Ser Val Gln Asp Ile Pro Val Met
             20                  25                  30
Lys Gln Ser Ile Gln Lys Ile Phe Lys Glu Ser Glu Val Ser Ser Tyr
         35                  40                  45
Trp Glu Ile Ser Ser Leu Tyr Asp Tyr Glu Phe Phe Lys Pro Ile Leu
     50                  55                  60
Asp Gln Leu Gln Ser Asp Gln Val Leu Phe Ser Ile Val Ser Phe Ile
 65                  70                  75                  80
Val Leu Ile Val Ala Cys Ser Asn Ile Val Thr Met Ser Ile Leu Leu
                 85                  90                  95
Val Asn Asn Lys Lys Lys Glu Ile Gly Ile Leu Lys Ala Met Gly Val
            100                 105                 110
Ser Ser Ser Arg Leu Gln Leu Val Phe Gly Leu Cys Gly Ala Cys Ser
        115                 120                 125
Gly Leu Val Gly Ala Leu Leu Gly Ser Ile Leu Ala Ala Leu Thr Leu
    130                 135                 140
Lys Asn Leu Gly Val Leu Thr His Trp Leu Ser Lys Leu Gln Gly Arg
145                 150                 155                 160
Glu Ala Phe Asn Pro Ser Phe Phe Gly Glu Gln Leu Pro Gln Asp Phe
                165                 170                 175
His Leu Pro Thr Val Ile Cys Leu Ser Leu Gly Ala Leu Val Leu Ala
            180                 185                 190
Ala Ile Ser Gly Ala Ile Pro Ala Gln His Val Ala Arg Met Gln Val
        195                 200                 205
Ser Asp Ile Leu Lys Ser Glu
    210                 215
<210>295
<211>332
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<212>PRT
<213>Chlamydia trachomatis
<400>295

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Val Gly Phe Tyr Leu Ala Ser Lys Ile Pro Lys Gly Val Met Lys Leu
  1               5                  10                  15
Glu Leu Leu Leu Ala Phe Lys Tyr Leu Ile Pro Lys Arg Lys Arg Leu
            20                  25                  30
Ser Ser Ser Ile Val Ser Ala Phe Ser Ile Gly Ile Val Ala Leu Val
        35                  40                  45
Val Trp Leu Ser Val Val Phe Met Ser Val Ile His Gly Leu Gln Gln
    50                  55                  60
Arg Trp Val Gly Asp Leu Ala Ser Leu His Ser Ser Ile Arg Ile Glu
65                  70                  75                  80
Pro Ser Asp Lys Tyr Tyr Glu Ser Tyr Tyr Tyr Gln Ile Asp Ser His
                85                  90                  95
Ala Glu Ala Ser Gln Tyr Ile Tyr Lys Thr Ile Gly Glu Lys Leu Leu
            100                 105                 110
Cys Glu Gln Thr Asp Pro Tyr Asp Pro Asp Val Asp Phe Leu Leu Pro
        115                 120                 125
Glu Ala Phe Pro Asp Pro Glu Phe Ser Asp Asn Gly Glu Met Ile Asp
    130                 135                 140
Pro Val Arg Thr Ala Asn Glu Arg Met Leu Ser Leu Phe Ser Ser Arg
145                 150                 155                 160
Lys Gly Ser Phe Val Glu Phe Glu Glu Gly Met Gly His Val His Met
                165                 170                 175
Asp Arg Ala Phe Arg Gly His Lys Gly Glu Pro Arg Ala Leu Ser Gln
            180                 185                 190
Tyr Ile Ala Tyr Ser Ser Asp Ile Leu Tyr Gln Gln Arg Val Leu Pro
        195                 200                 205
Phe Glu Glu Thr Asp Tyr Ser Thr Glu Val Leu Asn Arg Phe Asn Ala
    210                 215                 220
Ser Ser Glu Gly Trp Leu Ala Asp Phe Leu Val Leu Gln Glu Lys Phe
225                 230                 235                 240
Arg Gly Met Ser Val Ile Leu Pro Val Val Tyr Arg Asp Gln Gly Tyr
                245                 250                 255
Arg Val Gly Asp Thr Ala Ser Leu Ser Val Phe Ser Val Lys Lys Glu
            260                 265                 270
Gly Glu Val Arg Phe Pro Leu Arg Val Ile Gly Phe Tyr Asn Pro Gly
        275                 280                 285
Val Ser Pro Phe Gly Gly Lys Thr Ile Phe Ile Asp Lys Glu Leu Ala
    290                 295                 300
Ala Ser Ile Arg Ser Glu Ser Glu Gly Leu Val Cys Ile Met Ala Gly
305                 310                 315                 320
Arg Tyr Phe Phe Leu Val Phe Lys Ile Ser Leu Ser
                325                 330
```

<210>296
<211>315
<212>PRT
<213>Chlamydia trachomatis
<400>296

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Met Lys Lys Phe Ala Thr Phe Leu Cys Val Leu Leu Ser Gly Ser Gly
  1               5                  10                  15
Phe Ala Ala Pro Val Glu Ala Pro Gly Phe Pro Ser Ile Pro Glu Thr
            20                  25                  30
Tyr Ile Thr Ile Asn Asp Lys Glu Leu Gly Leu Gln Glu His Cys Arg           35
40                  45
Gly Val Asn Val Leu Ser Cys Gly Tyr Asn Leu Val Gly Met Phe His
    50                  55                  60
Thr Pro Thr Thr Pro Met Pro Leu Gly Gly Tyr Pro Thr Val Ile Phe
65                  70                  75                  80
Phe His Gly Phe Arg Gly Asn Cys Thr Gly Lys Asp Gly Val Tyr Arg
```

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                85                  90                  95
Asp Leu Ala Arg Leu Leu Thr Ala Asn Gly Ile Ala Val Ala Arg Phe
            100                 105                 110
Asp Met Ala Gly Cys Gly Asn Ser Glu Gly Ile Cys Asp Gln Ile Pro
        115                 120                 125
Ala Arg Thr Tyr Leu Arg Asn Gly Glu Asp Ile Leu Ala Thr Val Ala
    130                 135                 140
Lys Tyr Pro Glu Val Asn Pro His Arg Ile Gly Ile Ala Gly Val Ser
145                 150                 155                 160
Leu Gly Cys His Thr Thr Ile His Leu Ala Ser Thr Tyr Arg Pro Arg
                165                 170                 175
Asp Tyr Thr Val Gln Ala Ile Ser Val Trp Ala Pro Ile Ala Asp Gly
            180                 185                 190
Val Ile Leu Leu Lys Glu Ile Cys Ala Thr Ile Gly Leu Thr Met Thr
        195                 200                 205
Gln Phe Ser Asp Met Gly Glu Val Gly Lys Ala Phe Gly Phe Lys Gln
    210                 215                 220
Leu Pro Leu Lys Leu Cys Arg Asp Asp Ile Asp Phe Phe Leu Gly Ile
225                 230                 235                 240
Gln Asp His Ile Leu Leu Leu Ser Leu Pro Arg Arg Ile Pro Val Leu
                245                 250                 255
His Gln Gln Gly Leu Glu Asp Arg Val Val Ser Thr Ala His Gln Arg
            260                 265                 270
Leu Phe Leu Gly Ala Ala Pro Ala Gln Met Leu Ser Lys Ser Tyr Pro
        275                 280                 285
Glu Thr Pro His Glu Ile Ala Leu Ser Pro Tyr Arg Gln Glu Val Leu
    290                 295                 300
Gln Glu Ile Leu Thr His Phe Gln Ser Xaa Leu
305                 310                 315
<210>297
<211>518
<212>PRT
<213>Chlamydia trachomatis
<400>297
Glu Lys Ser Thr Phe Leu Leu Val Arg Ile Thr Met Ile Asp Val Leu
  1               5                  10                  15
Ile Met Gly Ala Asn Pro Ser Gly Leu Ile Leu Ala Ser Ile Leu Gln
             20                  25                  30
Gln His Arg Ala Arg Ile Lys Val Ile Asp Ser Arg Asp Ser Ile Thr
         35                  40                  45
Ala Ser Leu Pro Leu Pro Leu His Ser Leu Pro Val Val Leu Ser Ser
     50                  55                  60
Ser Ser Leu Glu Leu Leu Asp Asn Ile Asn Leu Leu Gly Asp Leu Leu
 65                  70                  75                  80
Asp Lys Gly Arg Lys Ile Phe Gly Ala Arg Tyr His Trp Lys Gln Arg
                 85                  90                  95
Thr Val Leu Phe Lys Phe Asn Gln Ser Ser Ala Ser Arg Cys Pro Phe
            100                 105                 110
Ser Leu Leu Ile Ser Tyr Asn Glu Leu Val Thr His Leu Leu Glu Glu
        115                 120                 125
Phe Glu Arg Leu Gly Gly Val Val Asn Trp Ala Thr Arg Pro Val Thr
    130                 135                 140
Gln Val Glu Gln Asn Leu Phe Ile Glu Ser Thr Lys Ser Ser Ser Gln
145                 150                 155                 160
Val Tyr Glu Gly Arg Glu Ile Phe Thr Pro Lys Trp Ile Ile Ala Cys
                165                 170                 175
Glu Met Asp Ala Asp Pro Asp Leu Lys Asp Leu Leu Lys Thr Gln Ile
            180                 185                 190
Lys Thr Lys Lys Ile His Lys Glu Ala Leu Phe Val Asp Cys Glu Glu
        195                 200                 205
Gly Glu Pro Phe Glu Glu Ser His Ile His Leu Leu Pro Val Thr Lys
```

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    210                 215                 220
Ser Phe Val Asn Phe Val Phe Tyr Asn Pro Tyr Arg Gly Ser Arg Gln
225                 230                 235                 240
Leu Tyr Leu Ala Asn Thr Ser Gly Ser Leu Ser Ser Lys Phe Lys Asn
                245                 250                 255
Lys Leu Leu Tyr Thr Tyr Ser Leu Ala Leu Ala Glu Asp Pro Leu Ser
            260                 265                 270
Ile Ser Ser Ser Leu Leu Gln Tyr Pro Phe Cys His Asp Arg Tyr Ile
        275                 280                 285
Phe Leu Gly Ser Ile Ala Asn Asn Leu Ser Phe Ser Tyr Leu Ser Gly
    290                 295                 300
Val Asn Ser Asn Ile His Asp Ala Phe Asn Leu Gly Trp Lys Leu Leu
305                 310                 315                 320
Pro Val Ile Lys Lys Ala Ala Ser Ser Gln Leu Ile Leu Ser Lys Glu
                325                 330                 335
Leu Lys Thr Ser His Val Leu Pro His Phe Asn Glu Val His Gln Lys
            340                 345                 350
Arg Ala Thr Lys Leu Leu Phe Ser Asn Met Tyr Thr Pro Ala Leu Met
        355                 360                 365
Tyr Tyr Tyr Leu Lys Gly Cys Lys Gln Leu Asp Ala Ala Glu Gly Glu
    370                 375                 380
Leu Tyr Tyr Pro Ser His Arg Ala Ser Lys Tyr Glu Ala Ser Asp Ile
385                 390                 395                 400
Ile Lys Val Ser Pro Asn Asp Lys Glu Ile Gln Gly Pro Arg Pro Gly
                405                 410                 415
Ser Arg Ala Leu Asp Ile Arg Leu Asp Thr Gly Asn Tyr Leu Leu Asp
            420                 425                 430
Ser Leu Lys Asn Ala Lys His Leu Leu Val Phe Phe Lys Glu Arg Pro
        435                 440                 445
Asp Leu Val His Ala Leu Leu Glu Glu Tyr Gly Glu Trp Val Asp Val
    450                 455                 460
Ile Val Thr Glu Asp Pro Lys Val His Lys Leu Tyr His Ala Asn Pro
465                 470                 475                 480
Glu Ser Leu Phe Ile Ile Arg Pro Asp Arg Tyr Ile Gly Tyr Arg Thr
                485                 490                 495
His Thr Phe Lys Leu His Glu Leu Ile Ser Tyr Leu Leu Arg Ile Phe
            500                 505                 510
Ala Ala Glu Asn Ala Asn
        515
<210>298
<211>542
<212>PRT
<213>Chlamydia trachomatis
<400>298
Gly Cys Leu Phe Ser Glu Glu Leu Val Ser Asp Gly Arg Lys Leu Pro
  1                 5                  10                  15
Tyr Pro Asp Leu Gly Asp Gln Asn Ile Lys His Leu Glu Lys Ile Arg
             20                  25                  30
Asp Val Tyr Gly Leu Asp Gly Val Ala Glu Leu Arg Val Ala Glu Ala
         35                  40                  45
Ala Leu Leu Gly Val Gln Lys Leu Pro Glu Glu Gln Lys Gln Glu Ser
     50                  55                  60
Leu Lys Ser Ala Val Lys Ala Leu Arg Ala Asp Ala Lys Val Leu Asn
 65                  70                  75                  80
Lys Lys Phe Lys Lys Leu Pro Glu Ser Tyr Gln Pro Gln His Ser Glu
                 85                  90                  95
Val Thr Gly Val Gln Gly Val Thr Glu Gln Glu Ser Arg Asp Asp Val
            100                 105                 110
Leu Val Ala Gln Asp Met Ala Ala Ile Glu Glu Leu Gln Asp Gln Tyr
        115                 120                 125
His Ala Ala Cys Leu Gln Phe Glu Ser Val Ser Met Arg Phe Leu Ala
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```
    130                 135                 140
Glu Gln Arg Lys Ala Lys Phe Leu Glu Lys Leu Leu Ile Gln Lys Arg
145                 150                 155                 160
Arg Asp Val Ser His Leu Ser His Gln Glu Ala His Tyr Thr Gln Val
                165                 170                 175
Val Ser His Leu Lys Glu Arg Ile Ser Met Arg Lys Gly Ala Ser Thr
            180                 185                 190
Gln His Ala Ser Lys Glu Glu Ile Ser Thr Lys Met Arg Glu Leu Leu
        195                 200                 205
Ser Leu Asp Asp Gln Leu Leu Lys Ala His Thr Ala Gln Asp Val Asn
    210                 215                 220
Trp Asp Asn Ser Ile Asn Gly Gln Leu Gln Gln Gln Phe Lys Lys Leu
225                 230                 235                 240
Ser Glu Glu Gly Ser Leu Gln Lys Val Lys Ala Leu Leu Glu Leu Asn
                245                 250                 255
Met Cys Leu Gly Asn Ala Gly Gln Thr Leu Tyr His Ser Arg Leu Lys
            260                 265                 270
Arg Glu Val Phe Glu Ala Ser Cys Ser Asn Thr Ser Gln Gln Leu Leu
        275                 280                 285
Gln Tyr Gly Glu Asp Leu Phe Ala Ser Tyr Asp Gly Ser Asp Arg Ser
    290                 295                 300
Ala Leu Leu Arg Phe Val Leu Gly Ser Gly Tyr Glu Met Ile Ser Glu
305                 310                 315                 320
Ala Ser Ser Glu Leu Lys Ser Leu Arg Lys Arg Trp Lys Arg Ser Ala
                325                 330                 335
Ser Gln Ala Ala Ile Ala Pro Glu Asp Tyr Glu Lys Val Cys Arg Val
            340                 345                 350
Leu Glu Arg Phe Leu Lys Ala Arg Asp Ser Leu Arg Pro Lys Leu Gly
        355                 360                 365
Leu Pro Leu Gly Lys Ser Ser Asp Ala Thr Val Gly Leu Gln His Gln
    370                 375                 380
Ile Arg Asp Asn Gln Arg Val Lys Ala Arg Val Thr Ala Cys Tyr Gln
385                 390                 395                 400
Glu Ser Cys Arg Asn Val Leu Gln His Leu Glu Asp Trp Val Arg Lys
                405                 410                 415
Thr Arg Gln Glu Ser Ala Glu Cys Gln Lys Val Glu Thr Lys Ile Arg
            420                 425                 430
Glu Phe Cys Gln Lys Ala Gly Ser Lys Glu Asn Leu Ala Glu Ser Thr
        435                 440                 445
Glu Met Leu Phe Ser Ser Leu Glu Glu Asp Leu Asn Lys Ile Pro Leu
    450                 455                 460
Asp Val Leu Arg Ala Ile Leu Arg Ser Leu Ser Ser Lys Val Leu His
465                 470                 475                 480
Ile Arg Asp Gln Lys Leu Glu Leu Glu Lys Leu Glu Glu Gln Phe Ala
                485                 490                 495
Lys Thr Asn Ile Ile Val Lys Ala Lys Glu Ala Glu Phe Glu Lys Asn
            500                 505                 510
Gly Glu Val Trp His Asn Gln Tyr Gln Met Leu Lys Ser Gln Met Glu
        515                 520                 525
Lys Leu Glu Ser Gln Lys Arg Arg Leu Thr Asp Lys Lys Glu
    530                 535                 540
<210>299
<211>949
<212>PRT
<213>Chlamydia trachomatis
<400>299
Glu Tyr Gly Ile Ile Leu Pro Ser Lys Ile Val Phe Gln Glu Ser Met
  1                 5                  10                  15
Ala Asn Pro Ser Thr Pro Pro Ser Asn His Ser Gly Leu Ser Leu Gln
             20                  25                  30
Gly Arg Leu Arg Ala Ser Ser Gln Gln Cys Thr Gln Ala Gly Gln Gly
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```
          35                  40                  45
Asp Pro Gln Pro Leu Ser Pro Glu Ser Arg Gly Leu Thr Ser Asn Phe
     50                  55                  60
Ser Thr Arg Arg Asp Leu Ile Asp Val Val Glu Glu Ser Ile Glu Thr
 65                  70                  75                  80
Ala Lys Gly Ser Glu Leu Lys Lys Leu Arg Ile Tyr Glu Ile Ala Leu
                 85                  90                  95
Lys Ile Leu Thr Ile Ile Gly Ala Ala Ile Leu Phe Ala Val Pro Leu
            100                 105                 110
Cys Met Leu Leu Gly Val Pro Leu Trp Ile Pro Ile Val Thr Cys Ile
        115                 120                 125
Gly Val Gly Ile Ala Phe Ser Ile Ala Lys Gly Cys Leu Gln Lys Arg
    130                 135                 140
Cys Gln Gln Ile Arg Glu Glu Tyr Arg Ala Leu His Leu Tyr His Arg
145                 150                 155                 160
Tyr Leu Leu Ser Asn Lys Asp Ser Ile Asp Gly Thr Leu Leu Ser Arg
                165                 170                 175
Phe Asp Ile Arg Phe Arg Lys Ala Glu Glu Lys Leu His Gly Leu Asp
            180                 185                 190
Leu Asp Lys Arg Glu Ala Asn His Pro Leu Glu Ala Asp Lys Arg Tyr
        195                 200                 205
Asp Phe Ala Gly Leu Ala His Gln Arg Tyr Gln Val Asp Ala Ala Leu
    210                 215                 220
Gly Ile Ser Ser Ser Gln Asp Ala Phe Trp Arg Gly Val Ala Gln Gln
225                 230                 235                 240
Val Lys Ser Val Lys Asp Asp Val Val Leu Gly Asp Lys Ala Ser Thr
                245                 250                 255
Asp Leu Tyr Pro Ile Ala Gln Gln Ala Leu Gln Ala Ala Gly Val Gly
            260                 265                 270
Phe Ser Gly Ala Ala Gly Lys Glu Ser Leu Leu Asp Leu Ala Lys Ser
        275                 280                 285
Leu Ser Ser Leu Phe Ala Trp Gly Ser Gln Val Gly Lys Asp Ser His
    290                 295                 300
Glu Ala Leu Gln Arg Tyr Gln Met Arg Phe Leu Ser Ser Pro Ile Leu
305                 310                 315                 320
Ala Thr Trp Cys Gly Ala Gly Phe Ser Thr Ser Ala Gln Asp Phe Val
                325                 330                 335
Leu Lys Gly Lys Asn Val Leu Asp Ile Ala Ser Glu Asn His Thr Lys
            340                 345                 350
Met Gln Asn Ala Ile Lys Cys Val Gln Leu Val Ser Val Leu Gly Lys
        355                 360                 365
Met Arg Asn Trp Lys Glu Lys Ile Asp Thr Leu Ile Gln Asn Lys Asn
    370                 375                 380
Leu Asp Gln Asp Ser Leu Arg Lys Leu Tyr Gln Asp Ile Glu Lys Ala
385                 390                 395                 400
Met His Lys Val Cys Ile Glu Asp Gly Val Ser Ala Ser Ile Gln Ala
                405                 410                 415
Arg Val Arg Lys Val Thr Gln Lys Tyr Leu Arg Gln Asp Leu Gln Glu
            420                 425                 430
Leu Leu Asn Lys Lys Ala Pro Leu Asn Glu Ser Asp Leu Ser Lys Met
        435                 440                 445
Gln Lys Gly Ile Ser Ser Cys Ala Asn Leu Val Val Thr Leu Leu Glu
    450                 455                 460
Ser Gln Leu Gly Ile Ser Glu Gln Thr Ser Ile Lys Glu Val Glu Glu
465                 470                 475                 480
Ser Ile Tyr Arg Asp Leu Ile Asp Thr Ile Leu Gln Met Gly Ser Ala
                485                 490                 495
Ala Gly Gly Val Thr Pro Leu Val Asp Gly Val His Lys Ala Ile Arg
            500                 505                 510
Glu Gly Lys Thr Leu Arg Ser Glu Leu Ser Arg Ala Met Ser Leu His
        515                 520                 525
```

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Pro Arg Gln Ser Phe Leu Gly Val Gln Ser Ala Val Glu Lys Leu Gln
530 535 540
Ala Phe Ile Arg Asp Pro Lys Trp Gly Ala Ser Ala Val His Thr Ser
545 550 555 560
Ala Glu Glu Thr Leu Ala Gln Lys Gln Lys Phe Val Ser Asp Leu Thr
565 570 575
Arg Ile Gln Thr Ser Leu Ala Asp Trp Arg Glu Arg Tyr Gly Leu Phe
580 585 590
Glu Glu Thr Lys Leu Asn His Ile Val Ser Thr Asp Phe Val Ser Arg
595 600 605
Thr Glu Ala Phe Leu Asp Thr Leu Lys Asn Val Ala Glu Ala Cys Ser
610 615 620
Leu Glu Gln Ala Val Ala Glu Leu Lys Asp Cys Glu Asp Ala Met Lys
625 630 635 640
Ala Asp Leu Thr His Val Glu Gln Lys Met Asn Pro Thr Glu Ile Glu
645 650 655
Ser Ala Arg Glu Glu Phe Lys Gln Leu Met Glu Glu Leu Ala Gly Ile
660 665 670
Gln Glu Gln Leu Glu Gln Ile Ala Arg Pro Ile Tyr Glu Glu Gly Val
675 680 685
Ser Gly Lys Arg Leu Leu Leu Asn Thr Val Phe Ser His Pro Glu Ala
690 695 700
Leu Arg Lys Lys Val Gln Ala Lys Glu Thr Leu Leu Glu Ala Leu Thr
705 710 715 720
Lys Gly Glu Gln Pro Ser Pro Thr Lys Lys Lys Thr Leu Lys Gln Leu
725 730 735
Ser Glu Gly Cys Glu Tyr Phe Ser Ser Leu Val Ser Lys Ile Asn Ala
740 745 750
Val Lys Thr Ile Leu Glu Gly Ser Arg Gly Lys Lys Ile Ala Ser Gln
755 760 765
Asp Ile Arg Gln Leu Ile Gly Leu Thr Asp Glu Leu Ala Leu Lys Leu
770 775 780
Ser Ser Phe Gln Gln Asp Ser Leu Glu Ser Leu Leu Tyr Gly Leu Glu
785 790 795 800
Gly Leu Ser Ile Pro Ala Ala Ser Ile Glu Gln Lys Lys Gly Ser Pro
805 810 815
Lys Ser Ser Ser Ile Ala Glu Lys Val Val Tyr Ala Ser His Gln Arg
820 825 830
Val Tyr Asn Gly Val Lys Ala Lys Val Asn Arg Thr Leu Glu Ala Phe
835 840 845
Ser Gln Leu Ile Lys Gly Leu Arg Gly Ser Leu Arg Asn Ala Met Ile
850 855 860
Thr Lys Ala Val Val Ala Ala Ile Leu Ser Val Ala Phe Ser Cys Leu
865 870 875 880
Ala Ile Ala Leu Phe Ser Val Gln Leu Thr Trp Leu Pro Ile Met Leu
885 890 895
Cys Val Leu Ala Leu Val Leu Glu Ala Ile Pro Ser Ala Leu Ser Ile
900 905 910
Trp Val Glu Lys Arg Asn Trp Lys Tyr Glu Val Ala Ser Leu Ala Lys
915 920 925
Ser Trp Phe Arg Met Glu Glu Ser Phe Leu Ile Gln Ile Trp Gly Ile
930 935 940
Lys Ile Ser Ser Ile
945

<210>300
<211>395
<212>PRT
<213>Chlamydia trachomatis
<400>300
Arg Arg Cys Gly Ala Val Leu Arg Met Ala Ile Asp Gly Val Val Ile
1 5 10 15

Sequence Listing

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Lys Val Asp Asn Ile Ala His Gln Asp Arg Leu Gly Leu Thr Ser Lys
            20                  25                  30
His Tyr Arg Trp Ala Ile Ala Tyr Lys Tyr Ala Pro Glu Arg Ala Glu
        35                  40                  45
Thr Ile Leu Glu Asp Ile Val Phe Gln Val Gly Lys Thr Gly Ile Leu
    50                  55                  60
Thr Pro Val Ala Glu Leu Ala Pro Val Phe Leu Ser Gly Ser Arg Val
65                  70                  75                  80
Ser Arg Ala Ser Leu Tyr Asn Gln Asp Glu Ile Glu Lys Lys Asp Ile
                85                  90                  95
Arg Ile Gly Asp Ser Val Tyr Val Glu Lys Gly Gly Glu Val Ile Pro
            100                 105                 110
Lys Ile Val Gly Ile Asn Leu Ala Lys Arg Ser Leu Glu Ser Glu Pro
        115                 120                 125
Trp Lys Met Pro Ser Leu Cys Pro Val Cys His Glu Pro Val Val Lys
    130                 135                 140
Glu Lys Val Ser Val Arg Cys Ile Asn Pro Leu Cys Ser Gly Gly Met
145                 150                 155                 160
Leu Glu Lys Ile Cys Phe Phe Ala Ser Lys Ser Ala Leu Asn Ile Asp
                165                 170                 175
His Leu Gly Glu Lys Val Val Thr Lys Leu Phe Glu Val Gly Leu Ile
            180                 185                 190
Ser Ser Cys Ser Asp Ile Phe Ala Leu Thr Glu Glu Asp Leu Lys Gln
        195                 200                 205
Val Pro Gly Phe Lys Asp Arg Ser Ile Gln Asn Leu Leu Ala Ser Ile
    210                 215                 220
Ala Gly Ala Lys Lys Val Ala Leu Asp Arg Leu Leu Thr Ala Leu Ser
225                 230                 235                 240
Ile Pro Phe Val Gly Ser Ser Gly Ala Ile Ala Leu Ala Asp His Phe
                245                 250                 255
Gly Thr Leu Asp Lys Val Ile Glu Ala Ser Leu Asp Glu Leu Met Ser
            260                 265                 270
Ile Glu Gly Ile Gly Pro Lys Val Ala Ala Ser Ile Val Ala Phe Phe
        275                 280                 285
Ser Lys His Glu Asn Arg Glu Glu Ile Arg Arg Met Gln Glu Leu Gly
    290                 295                 300
Val Gln Val Leu Ser Lys Gln Ser Asp Lys Glu Ala Pro Leu Gln Gly
305                 310                 315                 320
Lys Val Phe Val Leu Thr Gly Thr Leu Gln Gln Met Thr Arg Thr Gln
                325                 330                 335
Ala Glu Glu Arg Ile Arg Ser Leu Gly Gly Lys Val Ser Ser Ser Val
            340                 345                 350
Ser Lys Ser Thr Tyr Ala Val Ile Ala Gly Ser Glu Ala Gly Gly Lys
        355                 360                 365
Leu Lys Lys Ala Gln Asp Leu Gly Leu Ser Ile Trp Asn Glu Ser Lys
    370                 375                 380
Leu Ser Arg Ile Leu Asp Ala Lys Ser Val Ser
385                 390                 395
<210>301
<211>128
<212>PRT
<213>Chlamydia trachomatis
<400>301
Asp Ser Leu Lys Lys Ala Pro Glu Asp Leu Glu Val Arg Gly Glu Val
  1                 5                  10                  15
Phe Leu Ser Tyr Glu Ala Phe Glu Glu Leu Asn Ala Cys Gln Arg Glu
            20                  25                  30
Gln Gly Lys Leu Glu Phe Ala Asn Pro Arg Asn Ala Ala Gly Gly Thr
        35                  40                  45
Leu Lys Leu Leu Ser Ser Lys Glu Ala Ala Lys Arg Lys Leu Asp Leu
    50                  55                  60
```

Ser Val Tyr Gly Leu Ile Thr Asp Gln Lys Lys Arg Ser His Phe Glu
65 70 75 80
Asn Leu Gln Leu Cys Ser Gln Trp Gly Phe Phe Val Ala Gly Met Pro
85 90 95
Lys Gln Cys Arg Ser Arg Gln Glu Val Val Glu Arg Ile Arg Glu Ile
100 105 110
Glu Glu Met Arg Arg Ser Ala Pro Asp Gly Tyr Arg Trp Ser Arg His
115 120 125

<210>302
<211>176
<212>PRT
<213>Chlamydia trachomatis
<400>302
Met Gly Ala Val Ser Arg Asp Asp Tyr Ile Ala Leu Cys Thr Glu Leu
1 5 10 15
Val Glu His Asp Arg Arg Tyr Tyr Ala Leu Asn Gln Pro Thr Ile Ser
20 25 30
Asp Tyr Ser Tyr Asp Met Lys Met Arg Glu Leu Gln Glu Ile Glu Val
35 40 45
Gln His Pro Glu Trp Lys Val Ser Trp Ser Pro Thr Met Tyr Leu Gly
50 55 60
Asp Arg Pro Ser Gly Gln Phe Pro Val Val Pro His Ser Ser Pro Met
65 70 75 80
Leu Ser Ile Ala Asn Val Tyr Ser Leu Gln Glu Leu Glu Glu Phe Phe
85 90 95
Ser Arg Thr Glu Lys Leu Leu Gly Tyr Ser Pro Gly Tyr Ser Leu Glu
100 105 110
Leu Lys Ile Asp Gly Ile Ala Val Ala Ile Arg Tyr Glu Lys Arg Leu
115 120 125
Phe Ala Gln Ala Leu Ser Arg Gly Asn Gly Val Lys Gly Glu Asp Ile
130 135 140
Thr Ala Asn Val Ser Thr Ile Arg Ser Leu Pro Met Arg Leu Pro Gln
145 150 155 160
Glu Gly Ser Arg Gly Ser Arg Ser Ala Arg Arg Ser Val Ser Phe Ile
165 170 175

<210>303
<211>599
<212>PRT
<213>Chlamydia trachomatis
<400>303
Ser Gln Asn Ser Asp Met Asp Leu Trp Ser Arg Asp Val Leu Ala Glu
1 5 10 15
His Arg Phe Ile Lys Lys Arg Tyr Ile Leu Lys Ile Leu Pro Ser Glu
20 25 30
Leu Ser Ser Ser Glu Asn Phe Met Arg Val Phe Gln Glu Val Ile Val
35 40 45
Gln Leu Ala Ala Ile Arg His Ala Ser Leu Val Ala Ile Glu Asn Val
50 55 60
Ser Arg Glu Gly Asp Arg Tyr Phe Val Val Thr Glu Glu Asn Gly Gly
65 70 75 80
Thr Ile Ser Leu Ala Gln Tyr Leu Ser Gly Arg Lys Leu Ser Glu Glu
85 90 95
Glu Val Val His Leu Ile Gln Gln Leu Cys Asp Ala Leu Glu Leu Val
100 105 110
His Ser Ile Gly Leu Ala His Gly Gln Ile His Leu His Ser Val His
115 120 125
Val Ser Phe Phe Asn Gly Ile Ala Asn Ile Tyr Leu Pro Glu Val Gly
130 135 140
Phe Ala Ser Leu Leu Arg Glu Arg Met Phe Ser Thr Ile Met Gln Ser
145 150 155 160
Gly Ser Ala Arg Glu Ser Ile Thr Arg Ile Arg Asp Leu Leu Met Phe

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                165                 170                 175
Glu Ala Pro Glu Glu Gln Glu Val Phe Gly Arg Glu Ala Asp Val Tyr
            180                 185                 190
Ser Val Gly Val Leu Ala Tyr Tyr Leu Leu Val Gly Ser Phe Pro Trp
        195                 200                 205
Gly Ser Phe Pro Lys Pro Ser Leu Cys Met Pro Asp Ser Trp Tyr Asp
    210                 215                 220
Trp Asp Gly Phe Ile Leu Ser Cys Leu Gln Gln Gln Arg Glu Ala Arg
225                 230                 235                 240
Pro Lys Cys Leu Arg Glu Ala Leu Arg Arg Lys Thr Ser Gly Glu Gln
                245                 250                 255
Leu Gln Val Thr Leu Asp Ser Cys Arg Glu Pro Leu Arg Glu Met Glu
            260                 265                 270
Ile Glu Asp Thr Pro Thr Glu Leu Gly Pro Pro Ser Ala Leu Ile Arg
        275                 280                 285
Glu Gly Glu Arg Leu Cys Glu Val Lys Glu Glu Gln His Ala Phe Val
    290                 295                 300
Leu Val Glu Ala Lys Ser Ile Asp Glu Ala Met Val Thr Thr Val Asp
305                 310                 315                 320
Ser Glu Glu Glu Leu Glu Ser Ser Glu Gly Tyr Ala Asn Pro Leu Gln
                325                 330                 335
Ser Leu Leu Ala Arg Glu Pro Val Val Ser Arg Tyr Val Glu Val Glu
            340                 345                 350
Arg Glu Glu Ile Lys Pro Gln Pro Leu Leu Thr Glu Met Ile Phe Ile
        355                 360                 365
Glu Gly Gly Glu Phe Ser Arg Gly Ser Gly Asp Gly Gln Arg Asp Glu
    370                 375                 380
Leu Pro Val His Asn Ile Thr Leu Pro Gly Phe Phe Leu Asp Ile His
385                 390                 395                 400
Pro Val Thr Asn Glu Gln Phe Val Arg Phe Leu Glu Cys Val Gly Ser
                405                 410                 415
Glu Gln Asp Glu His Tyr Asn Glu Leu Ile Arg Leu Lys Asp Ser Arg
            420                 425                 430
Ile Gln Arg Arg Ser Gly Arg Leu Ile Ile Glu Pro Gly Tyr Ala Lys
        435                 440                 445
His Pro Val Val Gly Val Thr Trp Tyr Gly Ala Ser Ser Tyr Ala Cys
    450                 455                 460
Trp Ile Gly Lys Arg Leu Pro Ser Glu Ala Glu Trp Glu Val Ala Ala
465                 470                 475                 480
Ser Gly Gly Lys Leu Gly Leu Arg Tyr Pro Thr Gly Glu Glu Ile Asp
                485                 490                 495
Lys Ser Lys Ala Asn Phe Phe Ser Ser Asp Thr Thr Pro Val Met Ser
            500                 505                 510
Tyr Pro Ser Ser Ile Leu Gly Leu Tyr Asp Met Ala Gly Asn Val Tyr
        515                 520                 525
Glu Trp Cys Gln Asp Trp Tyr Ser Tyr Asp Phe Tyr Glu Ser Ser Ala
    530                 535                 540
Leu Asp Pro Asp Ala Pro Leu Gly Pro Pro Gln Gly Val Tyr Arg Val
545                 550                 555                 560
Leu Arg Gly Gly Cys Trp Lys Ser Leu Lys Asp Asp Leu Arg Cys Ala
                565                 570                 575
His Arg His Arg Asn Asn Pro Gly Ala Ile Asn Ser Thr Tyr Gly Phe
            580                 585                 590
Arg Cys Ala Lys Asp Val Lys
        595
<210>304
<211>202
<212>PRT
<213>Chlamydia trachomatis
<400>304
Gly Gly Arg Leu Met Thr Thr Pro Asp Asn Asn Thr Ile Asp Val Ser
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  1               5                  10                  15
Phe Pro Thr Phe Val Arg Leu Asn Val Ala Thr Thr Asp Leu Ala Asp
            20                  25                  30
Gly Asn Lys Ser Asn Ala Val Thr Ile Thr Glu Thr Ala Thr Ala Asn
        35                  40                  45
Tyr Val Asn Val Thr Gln Asp Leu Thr Ser Ser Thr Ala Lys Leu Glu
    50                  55                  60
Cys Thr Gln Asp Leu Ile Ala Gln Gly Lys Leu Ile Val Thr Asn Pro
65                  70                  75                  80
Lys Ser Asp Ile Ser Phe Gly Gly Arg Val Asn Leu Ala Asp Asn Thr
                85                  90                  95
Ile Thr Tyr Asn Pro Tyr Asn Asn Gly Gly Gly Glu Val Ala Phe Thr
            100                 105                 110
Asp Ile Asn Ser Arg Gln Gly Lys Gln Tyr Val Pro Tyr Gly Leu Tyr
        115                 120                 125
Lys Asn Gly Ala Pro Lys Ile Ser Met Arg Ser Ala Leu Ser Gly Gly
    130                 135                 140
His Val Gly Ser Gly Asp Thr Arg Gly Trp Gly Ala Glu Val Leu Trp
145                 150                 155                 160
Asp Ala Tyr Thr Gln Gln Arg Glu Asp Leu Glu Asp Lys Ala Val Thr
                165                 170                 175
Phe Ser Pro Ala Asn Arg Gly Lys Leu Tyr Phe Glu Ala Ser Leu Arg
            180                 185                 190
Leu Pro Phe Cys Ser Val Ser Pro Ser Leu
        195                 200
<210>305
<211>283
<212>PRT
<213>Chlamydia trachomatis
<400>305
Glu Asp Asn Met Lys Lys Pro Val Phe Thr Gly Gly Ala Pro Ile Pro
  1               5                  10                  15
Gly Ile Ser Thr Glu Glu Gly Thr Gly Val Lys Asp Gln Asn Leu Trp
            20                  25                  30
Met Arg Asn Ala Thr Leu Lys Val Glu Gly Asp Ala Thr Ile Asp Asp
        35                  40                  45
Thr Leu Thr Ser Arg Asp Leu Lys Val Thr Gly Pro Thr Ile His Thr
    50                  55                  60
Asp Leu Asp Leu Ser Val Gly Gly Asp Val Lys Gly Gly Arg Thr Val
65                  70                  75                  80
Leu Gly Glu Thr Val Leu Glu Gly Asp Phe Asn Ile Lys Cys Asn Gln
                85                  90                  95
Gly Gln Val Pro Gln Phe Thr Asn Leu Ser Asp Pro Leu Ser Ala Arg
            100                 105                 110
Asp Ala Ile Thr Phe Asp Tyr Tyr Arg Asp Arg Ser Thr Gln Ala Tyr
        115                 120                 125
Asn Cys Ala Thr His Arg Asn Gly Ala Leu Val Lys Gly Asn Arg Phe
    130                 135                 140
Ile Asp Leu Arg Met His Asn Ile Asp Asp Ser Glu Ser Tyr Thr Pro
145                 150                 155                 160
Met Tyr Gln Asn Arg Phe Tyr Trp Lys Asp Asn Asp Gln Lys Lys Leu
                165                 170                 175
Tyr Leu Lys Ser Pro Gly Ile Tyr Gln Val Ala Phe Gln Ile Phe Arg
            180                 185                 190
Ser Gly Gly Tyr His Ser Gly Asn Glu Asp Pro Thr Ile Phe Leu Arg
        195                 200                 205
Leu Tyr Thr Ser Ala Tyr Glu Tyr Thr Asn Leu Cys Thr Gly Asp Thr
    210                 215                 220
Arg Gly Phe Asn Pro Glu His Thr Thr Asn Thr Ser Leu Tyr Ser Ile
225                 230                 235                 240
Phe Ser Ile Pro Ser Ile Gly Asn Glu His Pro Phe Ile Gln Val Phe
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                245                 250                 255
Thr Lys Ile His Val Asn Ile Ala Tyr Ser Met Ile Asn Val Ile Trp
            260                 265                 270
Phe Pro Phe Gly Ser Ser Tyr Lys Glu Ala Asp
        275                 280
<210>306
<211>285
<212>PRT
<213>Chlamydia trachomatis
<400>306
Met Ser Asp Ser Asp Lys Ile Ile Asn Asp Cys Arg Phe Asp Phe Asn
  1               5                  10                  15
Thr Thr Val His Gly Asp Leu Leu Ala Ser Asn Leu Thr Thr Glu Gly
             20                  25                  30
Asp Val Thr Val Lys Ser Ile Ser Ala Lys Glu Ser Phe Ser Val Lys
         35                  40                  45
Arg Lys Val Asp Val Asn Glu Asn Asp Ile Ile Val Asn Gly Phe Thr
     50                  55                  60
Gly Ala Ala Gly Tyr Asp Leu Thr Thr Arg Gly Lys Ile Ser Ile Asn
 65                  70                  75                  80
Leu Asn Gly Asn Arg Leu Ser Asn Val Lys Cys Pro Glu Lys Asp Ser
                85                  90                  95
Gln Pro Val Pro Ala Asn Tyr Ile Arg Thr Pro Glu Tyr Tyr Phe Cys
            100                 105                 110
Ser Leu Gln Asp Gly Ala Arg Ile Glu Trp Lys Arg Gly Gln Lys Leu
        115                 120                 125
Pro Leu Ile Gly Pro Ser Arg Leu Val Tyr Gln Ser Ser Arg Ile Asn
    130                 135                 140
Glu Phe Ile Arg Phe Val Ser Phe Glu Glu Asn Lys Thr Arg Thr Gln
145                 150                 155                 160
Val Lys Ile Asn Leu Ser Gly Thr Thr Gly Leu Gln Met Leu Ala Lys
                165                 170                 175
Gly Val Tyr Ile Ile Asn Val Gly Val Gly Lys Arg Trp Gly Trp Asn
            180                 185                 190
Asn Gly Tyr Gly Gly Asp Tyr Cys Leu Ala Val Pro Leu Gly Lys Glu
        195                 200                 205
Tyr Ser Glu Ser Ser Thr Phe Ser Arg Gly Gly Tyr Tyr Ala Ser Thr
    210                 215                 220
Ala Val Gly Thr Ala Ile His Ile Arg Lys Glu Ser Thr Asn Pro Asp
225                 230                 235                 240
Gly Pro Phe Ser Ser Ser Asp Thr Glu Leu Met Lys Thr Leu Leu Glu
                245                 250                 255
Val Arg Tyr Lys Gly Gly Asp Tyr Val Asp Lys Ser Ala Leu Ser Thr
            260                 265                 270
Leu Tyr Phe Gly Val Leu Val Tyr Pro Glu Ile Gly Gly
        275                 280                 285
<210>307
<211>160
<212>PRT
<213>Chlamydia trachomatis
<400>307
Leu Ile Leu Arg Met Arg Arg Asp Arg Lys Glu Leu Met Leu Lys Lys
  1               5                  10                  15
Pro Asn Arg Asn Asp Pro Cys Pro Cys Gly Ser Gly Lys Lys Tyr Lys
             20                  25                  30
Gln Cys Cys Leu Lys Xaa Gln Ala Leu Thr Ala Arg His Thr Pro Glu
         35                  40                  45
Gly Lys Phe Lys Phe Ser Ile Thr Ala Ser Pro Ala Ala Gly Ala Ser
     50                  55                  60
Thr Glu Gly Phe Thr Lys Leu Phe Arg Gln Ser Val Asp Ser Tyr Thr
 65                  70                  75                  80
```

Ser Glu Gln Lys Glu Gly Met Ser Arg Phe Leu Ile Thr Lys Asn Lys
85 90 95
Glu Pro Ile Gly Lys Arg Ala Ile Arg Lys Ala Lys Ala Lys Glu Glu
100 105 110
Arg Ile Ile Ser Glu Lys Leu Ser Gln His Glu Phe Gln Val Met Asp
115 120 125
Thr Glu Val Ser Gly Glu Asp Ile Gln Ser Ser Leu Asp Tyr Glu Gln
130 135 140
Phe Leu Pro Thr Glu Glu Asp Tyr Arg Val Gln Lys Glu Glu Asp Ser
145 150 155 160
<210>308
<211>310
<212>PRT
<213>Chlamydia trachomatis
<400>308
Phe Tyr Arg Asn Thr Gln Lys Tyr Phe Met Tyr Val Arg Ser Ile Phe
1 5 10 15
Phe Ser Ile Ile Ala Phe Leu Thr Val Gly Cys Ser Phe Ser Pro Pro
20 25 30
Glu Ser Gly Leu Ile Ile Ala Ile His Asp Asp Pro Arg Ser Leu Ser
35 40 45
Pro Glu Lys Gly Glu Asn Ala Phe His Phe Ser Leu Ser Lys Ala Leu
50 55 60
Phe Ala Thr Leu Phe Arg Glu Glu Leu Ser Gly Leu Thr Pro Ala Leu
65 70 75 80
Val Ser Ser Tyr Gln Ile Ser Glu Asp Gly Arg Phe Tyr Arg Phe Cys
85 90 95
Ile Arg Lys Asp Ala Lys Trp Ser Asp Gly Ser Leu Leu Leu Ala Glu
100 105 110
Asp Val Ile Ala Ala Trp Glu His Thr Lys Gln Ala Gly Arg Tyr Ser
115 120 125
Leu Leu Phe Glu Lys Leu Ser Phe Arg Ala Ser Ser Ser Ser Glu Ile
130 135 140
Leu Ile Glu Leu Lys Glu Pro Glu Pro Gln Leu Leu Ala Ile Leu Ala
145 150 155 160
Ser Pro Phe Phe Ala Val Tyr Arg Pro Glu Asn Pro Phe Leu Ser Ser
165 170 175
Gly Pro Phe Met Pro Lys Thr Tyr Val Gln Gly Gln Thr Leu Val Leu
180 185 190
Gln Lys Asn Pro Tyr Tyr Tyr Asp His Ala His Val Glu Leu His Ser
195 200 205
Ile Asp Phe Arg Ile Ile Pro Asn Ile Tyr Thr Ala Leu His Leu Leu
210 215 220
Arg Arg Gly Asp Val Asp Trp Val Gly Gln Pro Trp His Gln Gly Ile
225 230 235 240
Pro Phe Glu Leu Arg Thr Thr Ser Ala Leu Tyr Thr His Tyr Pro Val
245 250 255
Asp Gly Thr Phe Trp Leu Ile Leu Asn Pro Lys Asp Pro Val Leu Ser
260 265 270
Ser Leu Ser Asn Arg Gln Arg Leu Ile Ala Ala Ile Gln Lys Glu Lys
275 280 285
Leu Val Lys Gln Ala Leu Gly Thr Gln Tyr Arg Val Ala Glu Ser Leu
290 295 300
His Leu Gln Arg Glu Ser
305 310
<210>309
<211>133
<212>PRT
<213>Chlamydia trachomatis
<400>309
Lys Ser Pro Ser Pro Glu Gly Ile Ile Ala His Gln Glu Ala Ser Thr

Applicant's Exhibit 2

```
  1               5                  10                  15
Pro Phe Pro Gly Lys Ile Thr Leu Ile Tyr Pro Asn Asn Ile Thr Arg
            20                  25                  30
Cys Gln Arg Leu Ala Glu Val Leu Gln Glu Gln Cys Arg Asp Ala Gly
        35                  40                  45
Ile Gln Leu Thr Leu Glu Gly Leu Glu Tyr His Val Phe Val Gln Lys
    50                  55                  60
Arg Ala Thr Gln Asp Phe Ser Val Ser Thr Ala Thr Ser Ile Ala Phe
65                  70                  75                  80
His Pro Leu Ala Lys Ser Lys Phe Asp Gln Thr Ala Leu Asp Asn Phe
                85                  90                  95
Thr Cys Leu Pro Leu Tyr His Ile Glu Tyr Asp Tyr Ile Leu Ser Arg
            100                 105                 110
Pro Leu Asp Gln Ile Val His Tyr Pro Ser Gly Ser Val Asp Leu Thr
        115                 120                 125
Tyr Ala His Phe His
    130
<210>310
<211>262
<212>PRT
<213>Chlamydia trachomatis
<400>310
Thr Lys Pro Ile Phe Phe Ser Leu Ile Glu Gln Asp Glu Arg Leu Thr
  1               5                  10                  15
Pro Leu Ser Tyr Glu Pro Gln Val Glu Ser Ser Leu Gln Val Val Arg
            20                  25                  30
Ser Ile Glu Asn Ala Ser Gly Leu Gly Ser Asp Ala Gln Pro Leu Gln
        35                  40                  45
Glu Leu Phe Arg Lys Leu Leu Leu Leu His Glu Gln Gly Pro Leu Ala
    50                  55                  60
Tyr Ile Gly Leu Val Trp Asn Phe Ala Asn Arg Phe Gly Gly Gly Ile
65                  70                  75                  80
Leu Glu Pro Lys Arg Leu Ser Arg Asp Gly Lys Asn Leu Leu Glu Leu
                85                  90                  95
Leu His Ala Leu Ala Ile Pro Val Asp Leu Ser His Cys Ser Asp Pro
            100                 105                 110
Leu Ala Asp Asp Ile Leu Asp Phe Thr Ala Asp Lys Met Pro Asp Met
        115                 120                 125
Phe Val Leu Ala Cys His Ser Asn Phe Arg Ala Val Gln Asp Ile Glu
    130                 135                 140
Arg Asn Leu Leu Asp Val His Ala Lys Glu Ile Phe Ala Arg Asp Gly
145                 150                 155                 160
Val Ile Gly Leu Asn Gly Val Asn Tyr Phe Val Gly Ala Ser Leu Glu
                165                 170                 175
Asp Ile Lys Lys His Ile Ala His Ala Gln Glu Leu Gly Ile Leu Asp
            180                 185                 190
Ser Leu Val Leu Gly Thr Asp Phe Phe Tyr Thr Glu Glu Glu Lys Phe
        195                 200                 205
Phe Pro Asn Phe Ser Thr Ala Lys Asp His Pro Lys Leu His Ala Leu
    210                 215                 220
Ile Lys Glu Ala Ile Pro Ile Asp Lys Ala Gln Ser Leu Leu Glu Glu
225                 230                 235                 240
Arg Ala Gln Arg Phe Leu Asn Arg Val Val Ser Ala Gln Lys Lys Val
                245                 250                 255
Val Asn His Ile Ala Phe
            260
<210>311
<211>281
<212>PRT
<213>Chlamydia trachomatis
<400>311
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Substitute Sheet (Rule 26)

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Val Phe Ser Gln Gln Ile Glu Glu Ser Ile Lys Ala Gly Gln Val Phe
 1               5                  10                  15
Ala Phe Pro Thr Asp Thr Val Tyr Gly Leu Gly Val Ser Phe His Ile
            20                  25                  30
Leu Asp Ala Asp Gln Arg Leu Phe Ala Leu Lys His Arg Ser Ser Gln
        35                  40                  45
Lys Ala Leu Ser Val Tyr Val Ser Ser Leu Glu Glu Leu Glu Ala Val
    50                  55                  60
Ala Gln Gln Ser Leu Gly Ala Ser Ser Arg Lys Ile Ile Gln Lys Phe
65                  70                  75                  80
Leu Pro Gly Pro Leu Thr Leu Ile Thr Lys His Asn Asn Pro Arg Phe
                85                  90                  95
Pro Gln Lys Thr Leu Gly Phe Arg Ile Val Asn His Pro Ile Val Gln
            100                 105                 110
Gln Ile Ile Gln Lys Val Gly Pro Phe Leu Ala Thr Ser Ala Asn Leu
        115                 120                 125
Ser Gly Phe Pro Ser Ala Val Ser Ala Asp Glu Val Lys Gln Asp Phe
    130                 135                 140
Pro Glu Glu Asp Ile Val Met Ile Ser Gly Glu Cys Ser Ile Gly Leu
145                 150                 155                 160
Glu Ser Thr Val Ile Asp Pro Glu Glu Arg Ile Val Tyr Arg Glu Gly
                165                 170                 175
Ala Ile Ser Ile Ala Glu Ile Glu Thr Val Leu Gly Ala Pro Cys Ala
            180                 185                 190
Asn Leu Ser Lys Glu Leu Gly Phe Arg Glu Lys Ile Gly Ile His Val
        195                 200                 205
Val Lys Thr Pro Ala Asp Leu Cys Ser Phe Leu Leu Ser Arg Pro His
    210                 215                 220
Phe Lys Gly Val Ile Cys His Gln Pro His Pro His Thr Phe Tyr Ser
225                 230                 235                 240
Val Leu Arg Gln Ala Leu Arg Ser Pro Thr Gln Glu Ile Ile Phe Val
                245                 250                 255
Tyr Asp Leu Cys Asn Thr Glu Tyr Pro Ile Leu Ser Arg Phe Leu Gly
            260                 265                 270
Val Ser Tyr Asp Ser Gly Tyr Ala Leu
        275                 280
<210>312
<211>252
<212>PRT
<213>Chlamydia trachomatis
<400>312
Val Leu Pro Lys Ala Leu Asp Gln Leu Leu Gly Arg Tyr Met Ser Tyr
 1               5                  10                  15
Ser Phe Phe Arg Arg Lys Leu Ala Gly Ile Glu Phe Ile Glu Cys Pro
            20                  25                  30
Gly Asp Pro Glu Ala Pro Val Ile Ile Phe Cys His Gly Tyr Gly Ala
        35                  40                  45
Ser Ala Asp His Leu Thr Phe Phe Pro Thr Met Cys Val Cys Ala Asn
    50                  55                  60
Leu Arg Pro Thr Trp Val Phe Pro His Gly Ile Glu Gln Leu Pro Tyr
65                  70                  75                  80
Gln Leu Gly Gly Gly Arg Ala Trp Phe Pro Leu Asp Thr Val Leu Phe
                85                  90                  95
Glu Lys Leu Ile Ser Ser Gln Glu Ile Thr Pro Asp Thr Asp Arg Leu
            100                 105                 110
Tyr Gln Gln Leu Leu Asp Val Asp Phe Glu Lys Pro Lys Gln Ala Leu
        115                 120                 125
Glu Gly Leu Ile His Glu Leu Glu Arg Asp Arg Ser Glu Val Ile Ile
    130                 135                 140
Gly Gly Phe Ser Gln Gly Ala Met Met Thr Thr His Leu Met Leu Ser
145                 150                 155                 160
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Ser Arg Leu Pro Tyr Arg Gly Ala Leu Ile Cys Ser Gly Ala Ala Val
165 170 175
Pro Asn Gln Ser Trp Glu Glu Asn Ala Ser Leu Cys Gly Lys Thr Pro
180 185 190
Tyr Ile Gln Ser His Gly Tyr Asp Asp Pro Ile Leu Pro Tyr Phe Leu
195 200 205
Gly Glu Arg Leu Tyr Lys Val Leu Thr Ala Ser Leu Lys Gly Glu Met
210 215 220
Val Ser Phe His Gly Gly His Glu Ile Pro Val Val Met Met Gln Lys
225 230 235 240
Ile Gln Glu Ser Ile Ala Leu Trp Ser Gln Ser Thr
245 250

<210>313
<211>85
<212>PRT
<213>Chlamydia trachomatis
<400>313
Ser Arg Thr Ala Arg Cys Ile Gln Arg Gly Ala Leu Tyr Ala Leu Val
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20 25 30
Ala Lys Ser Val Val Ala Ile Gln Ala Gly Glu Ser Leu Asp Thr Gly
35 40 45
Glu Leu Ala Trp Glu Glu Met Pro Ser Ile Thr Ala Cys Leu Gly Arg
50 55 60
Glu Gly Ile Asp Ala Gln Ala Tyr Ser Phe Leu Ser Val Ser Pro Leu
65 70 75 80
Asp Ala Arg Ile Glu
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<210>314
<211>324
<212>PRT
<213>Chlamydia trachomatis
<400>314
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1 5 10 15
Leu Lys Met Val Ser Phe Asp Leu Asn Asp Pro Val Arg Asn Thr Asp
20 25 30
Asn His Tyr Arg Asn Ile Asn Arg Met Leu Asn Ser Ala Thr Cys Ala
35 40 45
Ala Gly Gly Ile Gly Leu Leu Thr Pro Val Val Cys Ser Pro Met Gly
50 55 60
Ala Phe Cys Phe Ala Gln Gly Pro Ser Ser Ala Glu Asp Leu Gly His
65 70 75 80
Arg Ile Gln His Phe Val Ala Cys Leu Gly Pro Ala Ala Gly Phe Tyr
85 90 95
Ser Leu Ser Asn Glu Arg Ile Met Phe Glu Glu Ala Ala Val Pro Ser
100 105 110
Val Leu Glu Ala Val Glu Ala Thr Phe Trp Ile Ser Ala Phe Ala Arg
115 120 125
Leu Arg Gly Asn Lys Pro Ser Thr Cys Asp Thr Val Met Met Ser Cys
130 135 140
Leu Ile Gly Cys Ile Ser Leu Val Cys Gly Ala Met Phe Val Ala Ile
145 150 155 160
Val Ser Cys Ala Val Lys Ile Ser Arg Ile Val Arg Thr Met Thr Gln
165 170 175
Ala His Ala Leu Arg Glu Thr Ile Gln Arg Gln Leu Ala Ala Arg Ala
180 185 190
Thr Asp Met Arg Ser Ala Tyr Ser Lys Leu Lys Gly Ile Ile Ala Ile
195 200 205
Arg Ala Leu Asn Glu Val Glu Arg Gly His Arg Lys Leu Arg Asn Lys

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    210                 215                 220
Met Ile Thr Ala Phe Val Ala Asn Ala Leu Ile Thr Leu Ala Phe Cys
225                 230                 235                 240
Ala Leu Leu Ala Ser Ala Val Ile Ala Ala Phe Phe Leu Gly Ala Ala
                245                 250                 255
Ser Ala Gly Leu Ala Ser Val Phe Phe Gly Cys Leu Trp Gly Gly Ile
            260                 265                 270
Gly Ala Leu Ala Val Gly Val Leu Val Gly Ile Val Ser Gly Ile Cys
        275                 280                 285
Gln Arg Asn Tyr Lys Val Glu Leu Arg Gly Val Phe Ser Glu Val Leu
    290                 295                 300
Phe Met Arg Leu Phe Leu Arg Lys Cys Ser Asp Ser Leu Lys Asn Ser
305                 310                 315                 320
Leu Lys Met Val
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<210>315
<211>92
<212>PRT
<213>Chlamydia trachomatis
<400>315

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Leu Arg Trp Gln Ile Pro Glu Thr Met Pro Thr Lys Thr Pro Thr Ala
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Lys Ala Pro Met Pro Pro His Lys His Pro Lys Lys Thr Leu Ala Ser
            20                  25                  30
Pro Ala Leu Ala Ala Pro Lys Lys Asn Ala Ala Ile Thr Ala Glu Ala
        35                  40                  45
Asn Lys Ala Gln Lys Ala Ser Val Met Ser Ala Phe Ala Thr Lys Ala
    50                  55                  60
Val Ile Ile Leu Phe Leu Asn Phe Arg Trp Pro Leu Ser Thr Ser Leu
65                  70                  75                  80
Arg Ala Leu Met Ala Ile Met Pro Leu Ser Leu Glu
                85                  90
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<210>316
<211>157
<212>PRT
<213>Chlamydia trachomatis
<400>316

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Leu Gly Glu Thr Glu Ala Ser Ile Glu Ser Lys Glu Ile Cys Gly Gly
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Arg Arg Ala Val Met Ala Cys Cys Ala Cys Val Tyr Gly Tyr Asp Glu
            20                  25                  30
Ile Cys Cys Arg Glu Glu Thr Ala Glu Lys Val Val Ala Val Ala Val
        35                  40                  45
Asp Cys Val Leu Phe His Ile Ala Ala Ala Ile Thr Thr Ala Val Ser
    50                  55                  60
Ala Val Trp Leu Leu Ile Arg Leu Ile Ala Cys Ala Ile His Asn Tyr
65                  70                  75                  80
Cys Ser Pro Ala Ser Glu Arg Val Asn Phe Phe Pro Ile Thr Glu Ser
                85                  90                  95
Arg Ala Glu Trp Phe Ser Leu Ile Pro Val Leu Gly Pro Met Val Val
            100                 105                 110
Ala Ala Val Val Tyr Phe Lys Ala Arg Glu Glu Gly Tyr Gly His Leu
        115                 120                 125
Asp Ser Leu Val Cys Ala Met Gln Ser Pro Trp Met Leu Leu Asp Ser
    130                 135                 140
Leu Arg Leu Asn Arg Ser Glu Leu Lys Ile Val Met Val
145                 150                 155
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<210>317
<211>267
<212>PRT
<213>Chlamydia trachomatis

<400>317
Met Ser Arg Lys Pro Ala Ser Asn Ser Ser Arg Asn Thr Lys Arg Ser
1 5 10 15
Ser Asp Thr Ser Trp Glu Val Ile Ala Gln Asp Tyr Asn Lys Ala Val
20 25 30
Asp Arg Asp Gly His Phe Tyr His Lys Glu Val Ile Leu Pro Asn Leu
35 40 45
Leu Ser Lys Leu His Ile Ser Arg Ser Ser Ser Leu Val Asp Val Gly
50 55 60
Cys Gly Gln Gly Ile Leu Glu Lys His Leu Pro Lys Tyr Leu Pro Tyr
65 70 75 80
Leu Gly Ile Asp Leu Ser Pro Ser Leu Leu Arg Phe Ala Lys Lys Ser
85 90 95
Ala Ser Ser Lys Ser Arg Arg Phe Leu His His Asp Met Thr Gln Pro
100 105 110
Val Pro Ala Asp His His Glu Gln Phe Ser His Ala Thr Ala Ile Leu
115 120 125
Ser Xaa Gln Xaa Met Glu Ser Pro Glu Gln Ala Ile Ala His Thr Ala
130 135 140
Asn Leu Leu Ala Pro Gln Gly Arg Leu Phe Ile Val Leu Asn His Pro
145 150 155 160
Cys Phe Arg Ile Pro Arg Leu Ser Ser Trp Leu Tyr Asp Glu Pro Lys
165 170 175
Lys Leu Leu Ser Arg Lys Ile Asp Arg Tyr Leu Ser Pro Val Ala Val
180 185 190
Pro Ile Val Val His Pro Gly Glu Lys His Ser Glu Thr Thr Tyr Ser
195 200 205
Phe His Phe Pro Leu Ser Tyr Trp Val Gln Ala Leu Ser Asn His Asn
210 215 220
Leu Leu Ile Asp Ser Met Glu Glu Trp Ile Ser Pro Lys Lys Ser Ser
225 230 235 240
Gly Lys Arg Ala Arg Ala Glu Asn Leu Ser Arg Lys Glu Phe Pro Leu
245 250 255
Phe Leu Phe Ile Ser Ala Leu Lys Ile Ser Lys
260 265

<210>318
<211>318
<212>PRT
<213>Chlamydia trachomatis
<400>318
Phe Leu Cys Leu Leu Leu Gly Arg Tyr Ser Asp Ala Thr Ile Phe Arg
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Ser Gly Leu Asn Lys Ile Phe Cys Ser Gly Ile Thr Gln Ala Ser Leu
20 25 30
Lys Arg Leu Ile Ser Tyr Leu Val Ile Thr Leu Val Ser Pro Met Ile
35 40 45
Phe Ile Ile Val Cys Gly Ser Trp Ile Tyr Ile Thr Gln Ile Leu Pro
50 55 60
Ile Asn Tyr Pro Gln Leu Phe Ser Phe Ser His Ser Met Ala Phe Ile
65 70 75 80
Tyr Ile Val Ser Arg Leu Leu Pro Tyr Ala Leu Leu Tyr Gly Ile Leu
85 90 95
Phe Cys Cys Tyr Ala Phe Leu Ser Arg Val Pro Thr Lys Lys Ser Ala
100 105 110
Ala Phe Phe Ala Ala Thr Ile Ala Gly Ser Ala Trp Ile Leu Ser Gln
115 120 125
Lys Ile Phe Phe Cys Leu Gln Leu His Leu Phe Asn Tyr Ser Phe Thr
130 135 140
Tyr Gly Ala Leu Val Ala Leu Pro Ser Phe Leu Leu Leu Leu Tyr Leu
145 150 155 160
Tyr Ala Ile Ile Tyr Leu Phe Gly Gly Ala Leu Thr Phe Leu Phe Gln

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                165                 170                 175
Asn Lys Gly Phe Ser Ile Leu Ile Pro Lys Glu Glu Ile Phe Pro Ser
            180                 185                 190
Ser Tyr Phe Lys Phe Ile Leu Cys Val Tyr Val Leu Ser Leu Ile Thr
        195                 200                 205
Glu His Phe Asp Asn Ala Leu Pro Pro Pro Ser Ala Asn Tyr Leu Ala
    210                 215                 220
Asn Lys Ala Lys Ala Ser Ile Gly Glu Thr Ser Gln Cys Leu Asp Ile
225                 230                 235                 240
Leu Glu Arg Glu Gly Met Ile Leu Lys Tyr Lys Glu Gly Tyr Lys Pro
                245                 250                 255
Ser His Asn Ile Ala Asn Leu His Ile Asn Thr Ile Phe Asp Gln Leu
            260                 265                 270
Thr Lys Ser Pro Ala Phe Ser Lys Ile Cys Ser Pro Ser Leu Ile Pro
        275                 280                 285
Ile Gln Asp Ala Leu Thr His Ile Leu Thr Glu Ile Lys Lys Asn Ser
    290                 295                 300
His Asn Leu Ser Leu Ser Glu Ile Ala Lys Lys Val Asn Ser
305                 310                 315
<210>319
<211>151
<212>PRT
<213>Chlamydia trachomatis
<400>319
Lys Ser Glu Phe Met Lys Arg Ser Pro Trp Tyr Lys Ile Phe Gly Tyr
  1               5                  10                  15
Tyr Leu Leu Val Gly Val Pro Leu Ala Leu Leu Ala Leu Leu Pro Lys
             20                  25                  30
Phe Leu Ser Ser Glu Ser Gly Lys Tyr Leu Phe Leu Ser Val Leu Asn
         35                  40                  45
Lys Glu Thr Gly Leu Gln Cys Glu Ile Glu Gln Leu His Leu Ser Trp
     50                  55                  60
Phe Gly Ser Gln Thr Ala Lys Lys Ile Arg Ile Arg Gly Ile Asp Ser
 65                  70                  75                  80
Glu Ser Glu Ile Phe Ala Ala Glu Lys Ile Ile Val Lys Gly Ser Leu
                85                  90                  95
Pro Arg Leu Leu Leu Tyr Arg Phe Pro Lys Ala Leu Thr Leu Thr Gly
            100                 105                 110
Trp Ser Leu Gln Ile Asp Glu Ser Leu Ser Met Asn Ser Pro Ser Leu
        115                 120                 125
Tyr His Leu Asp Pro Gly Val Leu Leu Ser Lys Ile Glu Arg Arg Leu
    130                 135                 140
Ser Leu Gln Asn Leu Asp Pro
145                 150
<210>320
<211>154
<212>PRT
<213>Chlamydia trachomatis
<400>320
Asn Arg Ala Gln Val Ile Thr Ser Glu Leu Gly Ser Ile Thr Met Lys
  1               5                  10                  15
Thr Ile Asn Gly Ser Thr Leu Ser Val Ser Gly Phe Tyr Val Lys Lys
             20                  25                  30
Thr Ala Glu Gln Leu Leu Ile Arg Ala Leu Thr Lys Glu Asn Asp Val
         35                  40                  45
Pro Gly Ser Val Ala Val Glu Gly Ala Leu Ser Pro Asn Phe Val Leu
     50                  55                  60
Asn Val Glu Leu Ser Ser Val Pro Ala Ser Leu Phe Lys Leu Phe Ile
 65                  70                  75                  80
Ala Ser Pro Ser Leu Asp Arg Ile Leu Ser Thr Glu Asn Leu Ile Asn
                85                  90                  95
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Leu Thr Ala Lys Ala His Gln Glu Lys Asp Ser Thr Leu Ile Thr Leu
            100                 105                 110
Thr Ala Glu Gly Asn Gln Ile Ser Ala Lys Leu Arg Gly Tyr Val Arg
        115                 120                 125
Asp Arg Val Phe Leu Ile Thr Gln Gly Gly Ala Ser Phe Cys Ala Leu
    130                 135                 140
Thr Ala Tyr Asn Asn Phe Ser Asn Ser Leu
145                 150
<210>321
<211>280
<212>PRT
<213>Chlamydia trachomatis
<400>321
Ser His Lys Ala Glu Pro Pro Ser Val Leu Leu Gln Pro Thr Ile Thr
  1               5                  10                  15
Ser Arg Ile Leu Ser Glu Leu Ser Pro Leu Asp Thr Pro Ile Arg Ser
             20                  25                  30
Gln Glu Ala Tyr Leu Phe Ile Ser Glu Ala Lys Leu Pro Leu Ser Ile
         35                  40                  45
Ser Lys Trp Ser Ala Ser Asp Phe Ser Leu Gln Ala Asn Leu Pro Gln
     50                  55                  60
Ile Ser Val Asp Thr Leu Asp Pro Asn Leu Ser Ile Arg Thr Glu Asn
 65                  70                  75                  80
Thr Lys Ile Ser Ile Arg Lys Ser Asp His Leu Thr Val Met Arg Ser
                85                  90                  95
Ser Ser Ser Ala Ile Leu Gly Gly Ala Ser Pro Ser Tyr Ile His Ser
            100                 105                 110
Thr Leu Ser Met Asp Asn His Lys His Val Ala Glu Phe His Ile Gln
        115                 120                 125
His Ser Leu Leu Pro His Thr Tyr Leu Arg Ala Leu Leu Pro Lys Pro
    130                 135                 140
Ile Glu Ile Asn Thr Pro Leu Glu Val Pro Tyr Tyr Thr Leu Asp Ile
145                 150                 155                 160
Lys Gly Lys Tyr Arg Asn Thr Gln Leu Ser Cys Glu Ala Leu Leu Asp
                165                 170                 175
Asn Pro Leu Leu Arg Leu Ser Cys Asn Leu Ser Gly Pro Leu Tyr Ala
            180                 185                 190
Leu Gln Phe Ser Gly Glu Gly Ala Tyr Thr Leu Ser Glu Arg Trp Lys
        195                 200                 205
Glu Arg Leu Ala Pro His Phe Leu Gln Ile Gln Ala Ile Phe Ser Gly
    210                 215                 220
Lys Met His Phe Ser Gln Lys His Val Phe Phe Pro Lys Leu Ser Gly
225                 230                 235                 240
Lys Leu Ile Ala Gly Asp Asn Glu Ile Phe Ile His Gly Lys Cys Gly
                245                 250                 255
Arg Ala Ser Glu Glu Met Lys Pro Ser Asn Ser Ser Leu Leu Val Tyr
            260                 265                 270
Gly Asn Thr Leu Leu Ser Ser Phe
        275                 280
<210>322
<211>590
<212>PRT
<213>Chlamydia trachomatis
<400>322
Ile Tyr Tyr Pro Pro Lys Phe Ala Pro Leu Gln Met Thr Xaa Ser Ser
  1               5                  10                  15
Phe Ser Leu His Ser Asp Gly Gly Lys Ala Leu Leu Lys Gly Asn Val
             20                  25                  30
Lys Leu Phe Ile Thr Asp Pro Glu Ser Pro His Xaa Glu Xaa Thr Lys
         35                  40                  45
Ile Leu Ile Pro Asp Ile Val Ile Xaa Ser Leu Asp Pro Ser Ala Pro
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     50                  55                  60
Trp Thr Ala Asp Asn Xaa Ser Val Gln Ala Ser Gly Glu Leu Leu Gln
 65                  70                  75                  80
Leu Pro Val Asp Arg Leu Ile Arg Leu Gln His Lys Asp Leu Ser Leu
                 85                  90                  95
Ser Arg Tyr Ile Gly Glu Thr Ser Glu Ala Ser Phe Gln Leu Leu Tyr
            100                 105                 110
Ser Pro Asp Lys Glu Glu Thr Val Asp Ile Ser Ser Arg Phe Lys Thr
        115                 120                 125
Asp Ala Leu Thr Gly Asp Phe Arg Phe Val Met Asn Lys Glu Leu Ser
    130                 135                 140
Leu Thr Glu Lys Ala His Gly Ser Leu Gln Trp Glu Ile Ser Pro Glu
145                 150                 155                 160
Arg Tyr Ser Ser Phe Phe Glu Lys Ala Ser Cys Pro Pro Ser Cys Ile
                165                 170                 175
Leu His Arg Pro Thr Thr Phe Arg Leu Asp Leu Ser Lys Ile Ser Cys
            180                 185                 190
Leu Asp Lys Lys Thr Gly Tyr Ser Cys Leu Ser Leu Leu Ser Gln Gly
        195                 200                 205
Gly Ile Glu Gly Lys Leu Ser Ser Thr Pro Leu Val Phe Tyr Asp His
    210                 215                 220
Leu Ser Lys Glu Asn Phe Ile Val Asn Asn Ile Gly Gly Ser Val Tyr
225                 230                 235                 240
Ala Gln Asn Val Asn Asp Leu Ile Gln Tyr Gln Leu Asn Gly Asn Cys
                245                 250                 255
Leu Ala Pro Asn Gln Asp Asn Lys Thr Pro Val Ser Phe Ile Ile Glu
            260                 265                 270
Gly Glu Ala Arg Asn Ile Phe Ser Asp Glu Thr Arg Ala Cys Ser Gln
        275                 280                 285
Thr Ala Thr Trp Val Asn Ile Pro Thr Ser Phe Ile Thr Gly Ile Phe
    290                 295                 300
Pro Ile Ser Pro Gly Val Arg Ser Lys Leu Thr Ser Leu Ala Gly Pro
305                 310                 315                 320
Lys Ile His Val Ser Ile His Asn Asp Phe Ser Arg Gly Glu Gly Pro
                325                 330                 335
Val Thr Ile Lys Val Asp Ser Glu Asn Leu Thr Ala Tyr Phe Pro Leu
            340                 345                 350
Val Leu Thr Glu Gln Ala Ile Leu Leu Glu Asp Asp Leu Thr Ala Ser
        355                 360                 365
Leu His Ile Asn Glu Glu Ile Asn Lys Ala Phe Leu Arg Glu Phe Asn
    370                 375                 380
Pro Leu Ile Ala Glu Gly Gly Ala Tyr Ser Lys His Pro Val Ser Leu
385                 390                 395                 400
Arg Val Asn Lys Gln Asn Phe Tyr Leu Pro Ile Lys Pro Tyr Ser Phe
                405                 410                 415
Glu Asn Phe Arg Ile Gln Ser Ala Ser Leu Asp Phe Gly Lys Ile Glu
            420                 425                 430
Ile Ala Asn Thr Gly Thr Met Gln Asp Leu Phe Gln Phe Leu Asp Val
        435                 440                 445
Glu Ala Glu Gln Gln Arg Val Glu Ser Trp Phe Thr Pro Ile Phe Phe
    450                 455                 460
Ser Val Gln Lys Gly Gln Ile Ile Cys Lys Arg Phe Asp Ala Leu Ile
465                 470                 475                 480
Asp Gly Arg Ile Arg Leu Ala Leu Trp Gly Lys Thr Asp Ile Val Arg
                485                 490                 495
Glu Arg Leu Ala Met Thr Leu Gly Ile Asp Pro Glu Leu Ile Lys Lys
            500                 505                 510
Leu Phe Arg Asn Thr Met Leu Lys Thr Lys Asn Phe Phe Leu Ile Lys
        515                 520                 525
Ile Arg Gly Pro Ile Ser Ser Pro Glu Ile Asp Trp Ser Ser Ala Tyr
    530                 535                 540
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Ala Arg Ile Ala Leu Leu Lys Ser Tyr Thr Ile Ala Gly Pro Leu Asn
545 550 555 560
Ser Leu Ala Asp Lys Leu Phe Ser Ser Leu Gly Glu Pro Thr Pro Thr
565 570 575
Gln Thr Val Ser Pro Leu Pro Trp Glu Val Ser Glu Thr Glu
580 585 590

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<212>PRT
<213>Chlamydia trachomatis
<400>323
Met Thr Val Glu Val Lys Asp Leu Thr Val Ala Val Lys Gly Lys Glu
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Ile Leu Ser Asn Val Ser Phe Ser Leu Val Pro Gly Arg Ile Thr Leu
20 25 30
Phe Ile Gly Arg Ser Gly Ser Gly Lys Thr Thr Ile Leu Arg Ser Leu
35 40 45
Val Gly Leu Thr Pro Ile Ser Ser Gly Ser Ile Ser Val Val Gly Asp
50 55 60
Pro Pro Gly Phe Val Phe Gln Gln Pro Glu Leu Phe Pro His Met Thr
65 70 75 80
Val Leu Asp Asn Cys Ala His Pro Gln Met Ile Val Lys Lys Arg Gly
85 90 95
Glu Arg Glu Ala Lys Asp Lys Ala Leu Asp Leu Leu Gly Met Leu Glu
100 105 110
Leu Arg Glu Tyr Ala Ser Ser Tyr Pro His Gln Leu Ser Gly Gly Gln
115 120 125
Arg Gln Arg Val Ala Ile Ala Arg Ala Leu Ala Leu Asp Met Arg Ala
130 135 140
Ile Leu Phe Asp Glu Pro Thr Ser Ala Leu Asp Pro Phe Ser Ala Ser
145 150 155 160
Lys Phe Leu Gln Ile Val Leu Ser Leu Lys Glu Gln Gly Met Thr Ile
165 170 175
Ala Ile Ser Thr His Asp Met Leu Phe Ile Asn Gln Cys Leu Asp Arg
180 185 190
Val Tyr Leu Val Asp Lys Gly Gln Ile Ile Asp Ala Tyr Asp Ser Leu
195 200 205
His Asp Asp Pro Gln Gly Lys
210 215

<210>324
<211>216
<212>PRT
<213>Chlamydia trachomatis
<400>324
Gly Ile Val Glu His Tyr Leu Leu Thr Ala Lys Leu Leu Leu Arg Gly
1 5 10 15
Cys Gly Tyr Thr Leu Leu Ile Thr Ala Ile Ser Leu Val Cys Gly Phe
20 25 30
Val Leu Gly Trp Gly Ile Gly Thr Val Asn Ser Arg Tyr Phe Pro Cys
35 40 45
Arg Ile Ser Lys Phe Leu Gly Asn Phe Tyr Val Val Ala Val Arg Gly
50 55 60
Thr Pro Leu Phe Ile Gln Ile Leu Ile Val Tyr Phe Gly Leu Pro Ser
65 70 75 80
Leu Ile Lys Val Asn Leu Ser Pro Leu Val Ala Gly Leu Ile Ala Leu
85 90 95
Thr Leu Asn Ser Ala Ala Tyr Leu Ala Glu Asn Val Arg Ala Gly Ile
100 105 110
Asn Ala Leu Pro Val Gln Gln Trp Glu Ala Ala Lys Val Leu Gly Tyr
115 120 125
Thr Gly Pro Gln Ile Phe Leu His Ile Leu Tyr Pro Gln Val Phe Lys

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Sequence Search

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Asn Ile Leu Pro Ser Leu Ala Asn Glu Phe Val Ser Leu Ile Lys Glu
145                 150                 155                 160
Ser Ser Ile Leu Met Val Val Gly Val Pro Glu Leu Thr Lys Val Thr
                165                 170                 175
Lys Asp Ile Val Ala Arg Glu Leu Asn Pro Met Glu Met Tyr Leu Ile
            180                 185                 190
Cys Ala Gly Leu Tyr Leu Ile Met Thr Ser Ala Phe Ser Tyr Phe Ala
        195                 200                 205
Arg Leu Ser Glu Lys Glu Ser Ala
    210                 215
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<211>245
<212>PRT
<213>Chlamydia trachomatis
<400>325
Met Asp Arg Ser Pro Leu Phe Leu Ile Ile Met Gly Ala Pro Gly Ser
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Gly Lys Gly Thr Gln Ser Lys Leu Leu Ala Ser Gln Leu Ser Leu Leu
             20                  25                  30
His Ile Ser Ser Gly Asp Leu Leu Arg Gly Ala Val Ser Lys Asp Thr
         35                  40                  45
Pro Leu Ser Gln Glu Ile Lys Ser Tyr Leu Asp Gln Gly Lys Leu Leu
     50                  55                  60
Pro Asp Thr Leu Val Trp Lys Leu Val His Glu Lys Leu Asp Glu Phe
 65                  70                  75                  80
Gln Gln Asp Thr Leu Leu Arg Arg Leu Ser Phe Leu Ser Arg Ser Glu
                85                  90                  95
Asn Ser Ala Ile Leu Asp Gly Phe Pro Arg Thr Val Thr Gln Ala Lys
            100                 105                 110
Leu Leu His Glu Phe Leu Ser Ser Tyr Phe Pro Asn Tyr Lys Val Ile
        115                 120                 125
Leu Leu Asp Ile Ser Asp Glu Glu Val Leu Asn Arg Leu Thr Ser Arg
    130                 135                 140
Tyr Ile Cys Pro Ala Cys Gln Gly Ile Tyr Asn Glu Gln Gln Gly Phe
145                 150                 155                 160
Ser Ser Cys Pro Lys Cys Ser Val Glu Leu Ile Arg Arg Ser Asp Asp
                165                 170                 175
Thr Leu Glu Val Ile Leu Asp Arg Ile Gln Thr Tyr Lys Gln Glu Thr
            180                 185                 190
Gln Pro Val Leu Asp Tyr Tyr Thr Glu Lys Gln Lys Leu Ile Thr Ile
        195                 200                 205
Asp Ala Asn Ala Pro Thr Gln Gln Val Phe Gln Ser Ile Leu Asp Ser
    210                 215                 220
Leu Ser Ala Ser Leu Val Tyr Gln Glu Arg Asp Cys Cys Asn Cys Asp
225                 230                 235                 240
Cys Asp Asp Glu Asp
                245
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<213>Chlamydia trachomatis
<400>326
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Val Cys Asp Leu Leu Ser Asn Ala Glu Gly Ile Glu Thr Gln Val Leu
             20                  25                  30
Phe Gly Glu Arg Ile Cys Asn His Asn His Arg His Tyr Ala Tyr Ser
         35                  40                  45
Gln Leu Val Phe Ser Ser Ile Trp Lys Pro Tyr Pro Gly Asp Ser Leu
     50                  55                  60
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Gln Asn Ile Pro Leu Phe Ser Ser Gln Leu Gln Pro Pro Asn Ala Val
65 70 75 80
Val Cys Ser Gln Glu Ala Phe Leu Asp Pro Trp His Ile Pro Leu Pro
85 90 95
Phe Ala Ala Pro Leu His Ile Asp Asn Gln Asn Gln Val Ser Leu Ser
100 105 110
Pro Ala Ser Ile Ala Leu Leu Asn Ser Asn Ser Arg Ser Asn Tyr Ala
115 120 125
Lys Ala Phe Cys Ser Thr Lys Glu Ile Arg Phe Leu Asn Ser Ser Phe
130 135 140
Ser Leu Arg Asp Leu Val Ser Phe Ala Glu Gln Leu Ile Asp Thr Pro
145 150 155 160
Tyr Val Trp Gly Gly Arg Cys Ile His Lys Gln Leu Pro Arg Asn Gly
165 170 175
Val Asp Cys Ser Gly Tyr Ile Gln Leu Leu Tyr Gln Val Thr Gly Arg
180 185 190
Asn Ile Pro Arg Asn Ala Arg Asp Gln Tyr Arg Asp Cys Ser Pro Val
195 200 205
Lys Asp Phe Ser Ser Leu Pro Ile Gly Gly Leu Ile Phe Leu Lys Lys
210 215 220
Ala Ser Thr Gly Gln Ile Asn His Val Met Met Lys Ile Ser Glu His
225 230 235 240
Glu Phe Ile His Ala Ala Glu Lys Ile Gly Lys Val Glu Lys Val Ile
245 250 255
Leu Gly Asn Arg Ala Phe Phe Lys Gly Asn Leu Phe Cys Ser Leu Gly
260 265 270
Glu Pro Pro Ile Glu Ala Val Phe Gly Val Pro Lys Asn Arg Lys Ala
275 280 285
Phe Phe
290
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<213>Chlamydia trachomatis
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Lys Gln Ala Val Ser Ser Val Arg Leu Arg Ser Gly Asn Gly Lys Ile
20 25 30
Asp Val Asn Gly Lys Thr Leu Glu Gln Tyr Phe Pro Leu Glu Val Gln
35 40 45
Arg Ala Thr Ile Leu Ala Pro Leu Arg Met Leu Gly Asp Val Asn Ser
50 55 60
Phe Asp Leu Ile Ile Arg Val Ser Gly Gly Gly Val Gln Gly Gln Val
65 70 75 80
Ile Ala Thr Arg Leu Gly Leu Ala Arg Ala Val Leu Gln Glu Lys Glu
85 90 95
Asp Ile Lys Gln Glu Leu Lys Ala Gln Gly Phe Leu Thr Arg Asp Pro
100 105 110
Arg Lys Lys Glu Arg Lys Lys Tyr Gly Arg Lys Lys Ala Arg Lys Ser
115 120 125
Phe Gln Phe Ser Lys Arg
130
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<213>Chlamydia trachomatis
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1 5 10 15
Asp Arg Asn Lys Ala Trp Tyr Val Val Asn Ala Glu Gly Lys Thr Leu

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            20                  25                  30
Gly Arg Leu Ser Ser Glu Val Ala Lys Ile Leu Arg Gly Lys His Lys
        35                  40                  45
Val Thr Phe Thr Pro His Val Ala Met Gly Asp Gly Val Ile Val Ile
    50                  55                  60
Asn Ala Glu Lys Val Arg Leu Thr Gly Ala Lys Arg Ala Gln Lys Val
65                  70                  75                  80
Tyr His Tyr Tyr Thr Gly Phe Ile Ser Gly Met Arg Glu Val Pro Phe
                85                  90                  95
Glu Asn Met Ile Ala Arg Asn Cys Leu Cys Tyr Arg Ala Cys Cys
            100                 105                 110
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<213>Chlamydia trachomatis
<400>329

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Ser Pro Gly Arg Leu Asp Tyr Tyr Leu Pro Pro Ala Gly Pro Ala Val
            20                  25                  30
Arg Val Asp Gly Ala Cys Tyr Ser Gly Tyr Ala Ile Pro Pro Tyr Tyr
        35                  40                  45
Asp Ser Met Ile Ala Lys Val Ile Thr Lys Gly Lys Asn Arg Glu Glu
    50                  55                  60
Ala Ile Ala Ile Met Lys Arg Ala Leu Lys Glu Phe His Ile Gly Gly
65                  70                  75                  80
Val His Ser Thr Ile Pro Phe His Gln Phe Met Leu Asp Asn Pro Lys
                85                  90                  95
Phe Leu Leu Ser Asp Tyr Asp Ile Asn Tyr Val Asp Gln Leu Leu Ala
            100                 105                 110
Ser Gly Ser Thr Phe Leu Asn Leu Ala Asp Gly Ser
        115                 120
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<210>330
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<213>Chlamydia trachomatis
<400>330

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Leu Met Lys Glu Val Leu Ile Ala Asn Arg Gly Glu Ile Ala Val Arg
 1               5                  10                  15
Ile Ile Arg Ala Cys His Asp Leu Gly Leu Ala Thr Val Ala Val Tyr
            20                  25                  30
Ser Met Ala Asp Gln Glu Ala Leu His Val Leu Leu Ala Asp Glu Ala
        35                  40                  45
Val Cys Ile Gly Glu Ala Gln Ala Ala Lys Ser Tyr Leu Lys Ile Ala
    50                  55                  60
Asn Ile Leu Ala Ala Cys Glu Ile Thr Gly Ala Asp Ala Val His Pro
65                  70                  75                  80
Gly Tyr Gly Phe Leu Ser Glu Asn Ala Asn Phe Ala Ser Ile Cys Glu
                85                  90                  95
Ser Cys Gly Leu Thr Phe Ile Gly Pro Ser Ala Glu Ser Ile Ala Thr
            100                 105                 110
Met Gly Asp Lys Val Ala Ala Lys Gln Leu Ala Lys Lys Ile Lys Cys
        115                 120                 125
Pro Val Ile Pro Gly Ser Glu Gly Val Val Lys Asp Glu Val Glu Gly
    130                 135                 140
Ile Arg Ile Ala Glu Lys Ile Gly Phe Pro Ile Val Ile Lys Ala Val
145                 150                 155                 160
Ala Gly Gly Gly Gly Arg Gly Ile Arg Ile Val Arg Glu Lys Asp Glu
                165                 170                 175
Phe Tyr Arg Ala Phe Thr Ala Ala Arg Ala Glu Ala Glu Ala Gly Phe
            180                 185                 190
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Asn Asn Pro Asp Val Tyr Ile Glu Lys Phe Ile Glu Asn Pro Arg His
        195                 200                 205
Leu Glu Val Gln Val Ile Gly Asp Lys His Gly Asn Tyr Val Tyr Leu
    210                 215                 220
Gly Glu Arg Asp Cys Thr Val Gln Arg Arg Arg Gln Lys Leu Ile Glu
225                 230                 235                 240
Glu Thr Pro Ser Pro Ile Leu Thr Pro Glu Met Gln Ala Lys Val Gly
                245                 250                 255
Lys Val Ala Val Asp Leu Ala Arg Ser Ala Gly Tyr Phe Ser Val Gly
            260                 265                 270
Thr Val Glu Phe Leu Leu Asp Lys Glu Lys Arg Phe Tyr Phe Met Glu
        275                 280                 285
Met Asn Thr Arg Ile Gln Val Glu His Thr Ile Thr Glu Glu Val Thr
    290                 295                 300
Gly Ile Asp Leu Leu Lys Ala Gln Ile Ser Val Ala Lys Gly Glu Lys
305                 310                 315                 320
Leu Pro Trp Lys Gln Lys Asn Ile Glu Phe Lys Gly His Val Ile Gln
                325                 330                 335
Cys Arg Ile Asn Ala Glu Asp Pro Ser Asn Asn Phe Tyr Ser Phe Pro
            340                 345                 350
Trp
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09654-0259

<210>331
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<213>Chlamydia trachomatis
<400>331

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Met Asp Leu Lys Gln Ile Glu Lys Leu Met Ile Ala Met Gly Arg Asn
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Lys Met Lys Arg Ile Val Ile Lys Arg Glu Gly Leu Glu Leu Glu Leu
             20                  25                  30
Glu Arg Asp Thr Val Pro Ser Ile Gln Glu Pro Val Phe Tyr Asp Asn
         35                  40                  45
Arg Leu Phe Ala Gly Phe Ser Gln Glu Arg Pro Ile Pro Thr Asp Gln
     50                  55                  60
Asn Leu Gly Asn Pro Ile Val Lys Glu Ser Ile Glu Lys Lys Glu Ser
 65                  70                  75                  80
Glu Ala Pro Ala Gln Gly Asp Phe Ile Val Ser Pro Leu Val Gly Thr
                 85                  90                  95
Phe Tyr Gly Ser Pro Ser Pro Glu Ala Pro Ala Phe Ile Lys Pro Gly
            100                 105                 110
Asp Thr Val Ser Glu Asp Thr Val Val Cys Ile Val Glu Ala Met Lys
        115                 120                 125
Val Met Asn Glu Val Lys Ala Gly Met Ser Gly Arg Val Glu Glu Ile
    130                 135                 140
Leu Ile Thr Asn Gly Asp Pro Val Gln Phe Gly Ser Lys Leu Phe Arg
145                 150                 155                 160
Ile Val Lys Ala
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<210>332
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<213>Chlamydia trachomatis
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Met Val Leu Ser Ser Gln Leu Ser Val Gly Met Phe Ile Ser Thr Lys
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Asp Gly Leu Tyr Lys Val Val Ser Val Ser Lys Val Ser Gly Asn Lys
             20                  25                  30
Gly Asp Thr Phe Ile Lys Val Ser Leu Gln Ala Ala Gly Ser Asp Val
         35                  40                  45
Ile Val Glu Arg Asn Phe Lys Ala Gly Gln Glu Val Lys Glu Ala Gln
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```
     50                  55                  60
Phe Glu Pro Arg Asn Leu Glu Tyr Leu Tyr Leu Glu Glu Asp Lys Tyr
 65                  70                  75                  80
Leu Phe Leu Asp Leu Gly Asn Tyr Asp Lys Ile Tyr Ile Pro Lys Glu
                85                  90                  95
Ile Met Lys Asp Asn Ala Met Phe Leu Lys Ala Gly Val Thr Val Phe
            100                 105                 110
Ala Leu Val His Glu Gly Thr Val Phe Ser Met Glu Leu Pro His Phe
        115                 120                 125
Leu Glu Leu Met Val Ala Lys Thr Asp Phe Pro Gly Asp Ser Leu Ser
    130                 135                 140
Leu Ser Gly Gly Ala Lys Lys Ala Leu Leu Glu Thr Gly Val Glu Val
145                 150                 155                 160
Leu Val Pro Pro Phe Val Glu Ile Gly Asp Val Ile Lys Val Asp Thr
                165                 170                 175
Arg Thr Cys Glu Tyr Ile Gln Arg Val
            180                 185
<210>333
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<213>Chlamydia trachomatis
<400>333
Met Lys Lys Gln Gly Val Leu Val Ala Pro Ser Ile Met Gly Ala Asp
  1               5                  10                  15
Leu Ala Cys Ile Gly Arg Glu Ala Arg Asn Ile Glu Glu Ser Gly Ala
             20                  25                  30
Asp Leu Ile His Ile Asp Val Met Asp Gly His Phe Val Pro Asn Ile
         35                  40                  45
Thr Phe Gly Pro Gly Val Val Ala Ala Ile Asn Arg Ser Thr Glu Leu
     50                  55                  60
Phe Leu Glu Val His Ala Met Ile Tyr Thr Pro Phe Glu Phe Val Glu
 65                  70                  75                  80
Ala Phe Val Lys Ala Gly Ala Asp Arg Ile Ile Val His Phe Glu Ala
                85                  90                  95
Ala Glu Asn Ile Lys Glu Ile Ile Ser Tyr Ile Gln Lys Cys Gly Val
            100                 105                 110
Gln Ala Gly Val Ala Phe Ser Pro Glu Thr Ser Ile Glu Phe Val Thr
        115                 120                 125
Ser Phe Ile Pro Leu Cys Asp Val Ile Leu Leu Met Ser Val His Pro
    130                 135                 140
Gly Phe Cys Gly Gln Lys Phe Ile Pro Asp Thr Ile Glu Arg Ile Gln
145                 150                 155                 160
Phe Val Lys Gln Ala Ile Gln Val Leu Gly Arg Glu Gly Ser Cys Leu
                165                 170                 175
Ile Glu Val Asp Gly Gly Ile Asp Lys Glu Ser Ala Arg Ala Cys Arg
            180                 185                 190
Glu Ala Gly Ala Asp Ile Leu Val Ala Ala Ser Tyr Phe Phe Glu Lys
        195                 200                 205
Asp Ser Ile Asn Met Lys Glu Lys Val Leu Leu Leu Gln Gly Glu Glu
    210                 215                 220
His Gly Ala Lys
225
<210>334
<211>81
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<213>Chlamydia trachomatis
<400>334
Ser Pro Arg Ile Trp Phe Gln Arg Thr Leu Asn Glu Lys Val Pro Met
  1               5                  10                  15
Thr Thr Pro Thr Leu Ile Val Thr Pro Pro Ser Pro Pro Ala Pro Ser
             20                  25                  30
```

Tyr Ser Ala Asn Arg Val Pro Gln Pro Ser Leu Met Asp Lys Ile Lys
35 40 45
Lys Ile Ala Ala Ile Ala Ser Leu Ile Leu Ile Gly Thr Ile Gly Phe
50 55 60
Leu Ala Leu Leu Gly His Leu Val Gly Phe Leu Ile Ala Pro Gln Ile
65 70 75 80
His

<210>335
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<212>PRT
<213>Chlamydia trachomatis
<400>335
Ser Leu His Lys Phe Thr Asn Val Leu Leu Ala Leu Phe Ile Thr Ser
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Leu Ala Gly Asn Ala Leu Tyr Leu Gln Lys Thr Ala Asn Leu His Leu
20 25 30
Tyr Gln Asp Leu Gln Arg Glu Val Gly Ser Leu Lys Glu Ile Asn Phe
35 40 45
Met Leu Ser Val Leu Gln Lys Glu Phe Leu His Leu Ser Lys Glu Phe
50 55 60
Ala Thr Thr Ser Lys Asp Leu Ser Ala Val Ser Gln Asp Phe Tyr Ser
65 70 75 80
Cys Leu Gln Gly Xaa Arg Asp Asn Tyr Lys Gly Phe Glu Ser Leu Leu
85 90 95
Asp Glu Tyr Lys Asn Ser Thr Glu Glu Met Arg Lys Leu Phe Ser Gln
100 105 110
Glu Ile Ile Ala Asp Leu Lys Gly Ser Val Ala Ser Leu Arg Glu Glu
115 120 125
Ile Arg Phe Leu Thr Pro Leu Ala Glu Glu Val Arg Arg Leu Ala His
130 135 140
Asn Gln Glu Ser Leu Thr Ala Ala Ile Glu Glu Leu Lys Thr Ile Arg
145 150 155 160
Asp Ser Leu Arg Asp Glu Ile Gly Gln Leu Ser Gln Leu Ser Lys Thr
165 170 175
Leu Thr Ser Ala Lys Leu His Tyr Asn Glu Lys Arg Ala Gln Ile Cys
180 185 190
Val Pro Arg
195
<210>336
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<212>PRT
<213>Chlamydia trachomatis
<400>336
Gln Glu Thr Lys Phe Asp Lys Gly Ile Gly Gly Tyr Met Ile Cys Cys
1 5 10 15
Asp Lys Val Leu Ser Ser Val Gln Ser Met Pro Val Ile Asp Lys Cys
20 25 30
Ser Val Thr Lys Cys Leu Gln Thr Ala Lys Gln Ala Val Val Leu Ala
35 40 45
Leu Ser Leu Phe Ala Val Phe Ala Ser Gly Ser Leu Ser Ile Leu Ser
50 55 60
Ala Ala Val Leu Phe Ser Gly Thr Ala Ala Val Leu Pro Tyr Leu Leu
65 70 75 80
Ile Leu Thr Thr Ala Leu Leu Gly Cys Val Tyr Ala Val Ile Val Leu
85 90 95
Leu Arg Ser Leu Ser Ala Val Val Gln Ser Cys Lys Lys Arg Ser Pro
100 105 110
Glu Glu Ile Glu Gly Ala Ala Arg Pro Ser Asp Gln Gln Glu Ser Gly
115 120 125
Gly Arg Leu Ser Xaa Glu Ser Ala Ser Pro Gln Ala Ser Pro Thr Ser

6665-6221pcp

```
    130                 135                 140
Ser Thr Leu Arg Leu Glu Ser Ala Phe Arg Ser Ile Gly Asp Ser Val
145                 150                 155                 160
Ser Gly Ala Phe Asp Asp Ile Asn Lys Asp Asn Ser Arg Ser Arg Phe
                165                 170                 175
Thr Leu Leu Leu Arg Asp Asp Met
            180
<210>337
<211>91
<212>PRT
<213>Chlamydia trachomatis
<400>337
Thr His Pro Arg Arg Ala Val Val Asn Ile Ser Arg Tyr Gly Arg Thr
  1               5                  10                  15
Ala Ala Val Pro Leu Asn Ser Thr Ala Ala Asp Asn Met Asp Lys Leu
             20                  25                  30
Pro Glu Ala Asn Thr Ala Asn Lys Asp Asn Ala Arg Thr Thr Ala Cys
         35                  40                  45
Leu Ala Val Cys Lys His Phe Val Thr Glu His Leu Ser Ile Thr Gly
     50                  55                  60
Ile Asp Cys Thr Leu Asp Lys Thr Leu Ser Gln Gln Ile Met Tyr Pro
 65                  70                  75                  80
Pro Ile Pro Leu Ser Asn Phe Val Ser Cys His
                85                  90
<210>338
<211>138
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<213>Chlamydia trachomatis
<400>338
Glu Phe Leu Gly Gly Ser Met Glu Cys Val Lys Gln Leu Cys Arg Asn
  1               5                  10                  15
His Leu Arg Leu Asp Asn Leu Thr Asp Pro Val Arg Ser Val Leu Thr
             20                  25                  30
Lys Gly Thr Thr Ala Glu Lys Val Gln Leu Ala Ala Cys Cys Leu Gly
         35                  40                  45
Val Val Cys Ser Ile Ile Cys Leu Ala Leu Gly Ile Ala Ala Ala Ala
     50                  55                  60
Val Gly Val Ser Cys Gly Gly Phe Ala Leu Gly Leu Gly Ile Ile Ala
 65                  70                  75                  80
Ile Leu Leu Gly Ile Val Leu Phe Ala Thr Ser Ala Leu Asp Val Leu
                85                  90                  95
Glu Asn His Gly Leu Val Gly Cys Pro Phe Lys Leu Pro Cys Lys Ser
            100                 105                 110
Ser Pro Ala Asn Glu Pro Ala Val Gln Phe Phe Lys Gly Lys Asn Gly
        115                 120                 125
Ser Ala Asp Gln Val Ile Leu Val Thr Gln
    130                 135
<210>339
<211>136
<212>PRT
<213>Chlamydia trachomatis
<400>339
Leu Ala Pro Phe Leu Leu Thr Glu Phe Ser Ser Leu Ser Leu Leu Leu
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Ala Phe Ala Leu Ala Leu Glu Ile Phe Cys Ser Thr Ser Ala Val Leu
             20                  25                  30
Gln His Lys Leu Phe His Ile Lys Val Cys Asp Arg Cys Asn Arg Ser
         35                  40                  45
Leu Val Thr Ala Ser Val Val Ser Thr Pro Pro Thr Lys Ala Pro Pro
     50                  55                  60
Lys Arg Lys Ala Pro Thr Pro Lys Asn Lys Asp Ala Ala Thr Thr Glu
```

```
 65                  70                  75                  80
Thr Gly Leu Gln Ser Thr Pro Glu Asn Asn Lys Pro Ala Thr Thr Arg
                85                  90                  95
Arg Ala Met Ala Asn Ile Val Ala Thr Ala Thr Ala Ala Asn Leu Phe
            100                 105                 110
Ala Val Gly Asn Glu Leu Leu Arg Ser Lys His Leu Ser Lys Arg Ala
        115                 120                 125
Ile Leu Ser Thr Thr Leu Ser Cys
    130                 135
<210>340
<211>160
<212>PRT
<213>Chlamydia trachomatis
<400>340
Val Arg Asn Glu Ile Trp Leu Lys Ser Val Glu Val Arg Phe Met Thr
  1                 5                  10                  15
Lys Val Tyr Ala His Ser Ile Gln Gln Glu Arg Val Val Asp Arg Ile
             20                  25                  30
Ala Leu Leu Glu Arg Cys Leu Asp Leu Ser Asn Ser Leu Pro Thr Ala
         35                  40                  45
Lys Arg Leu Ala Ala Val Ala Val Ala Thr Ile Leu Ala Ile Ala Leu
     50                  55                  60
Leu Val Val Ala Gly Leu Leu Phe Ser Gly Val Leu Cys Ser Pro Val
 65                  70                  75                  80
Ser Val Val Ala Ala Ser Leu Phe Phe Gly Val Gly Ala Phe Leu Leu
                85                  90                  95
Gly Gly Ala Leu Val Gly Gly Val Leu Thr Thr Glu Ala Val Thr Arg
            100                 105                 110
Glu Arg Leu His Arg Ser Gln Thr Leu Met Trp Asn Asn Leu Cys Cys
        115                 120                 125
Lys Thr Ala Glu Val Glu Gln Lys Ile Ser Arg Ala Ser Ala Asn Ala
    130                 135                 140
Lys Ser Asn Asp Lys Leu Glu Asn Ser Val Ser Lys Lys Gly Ala Ser
145                 150                 155                 160
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<213>Chlamydia trachomatis
<400>341
Lys Ala Ala Gly Glu Ala Leu Leu Lys Lys Ser Ala Glu Lys Thr Arg
  1                 5                  10                  15
Arg Gly Ser Ser Ile Tyr Asp Tyr Phe Gln Gly Tyr Ile Ser Pro Glu
             20                  25                  30
Ile Leu Gly Val Leu Phe Ala Asp Ser Gly Val Thr Tyr Gln Glu Thr
         35                  40                  45
Leu Glu Tyr Arg Lys Lys Leu Val Met Leu Ser Lys Lys Tyr Pro Lys
     50                  55                  60
Ser Gly Ser Leu Arg Leu Arg Leu Ala Thr Thr Ala Leu Glu Leu Gly
 65                  70                  75                  80
Leu Val Lys Glu Gly Val Gln Leu Leu Glu Glu Ser Val Lys Asp Ala
                85                  90                  95
Pro Glu Asp Leu Ser Leu Arg Leu Gln Phe Cys Lys Ile Leu Cys Asn
            100                 105                 110
Arg His Asp Tyr Val Arg Ala Lys Tyr His Phe Asp Gln Ala Gln Val
        115                 120                 125
Phe Ser Leu Lys Arg Gly Cys Phe Pro Lys Lys Leu Pro Ile Leu Ser
    130                 135                 140
<210>342
<211>347
<212>PRT
<213>Chlamydia trachomatis
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Sequence Page

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Thr Ala Leu Arg Ala Thr Glu Arg Met Arg Lys Glu Pro Ile Pro Leu
35 40 45
Leu Asp Lys Gln Gln Ser Phe Trp Asn Val Asp Pro Tyr Cys Leu Glu
50 55 60
Ser Ile Cys Ala Cys Phe Val Ala His Arg Asp Pro Leu Ser Ala Lys
65 70 75 80
Arg Leu Met Tyr Leu Phe Pro Gln Leu Ser Glu Glu Asp Val Ser Val
85 90 95
Phe Ala Arg Cys Ile Leu Ser Ser Lys Arg Pro Glu Tyr Leu Phe Ser
100 105 110
Lys Ser Glu Glu Glu Leu Phe Ala Lys Leu Ile Leu Pro Arg Val Ser
115 120 125
Leu Gly Val His Arg Asp Asp Asp Leu Ala Arg Val Leu Val Leu Ala
130 135 140
Glu Pro Ser Ala Glu Glu Gln Lys Ala Arg Tyr Tyr Ser Leu Tyr Leu
145 150 155 160
Asp Val Leu Ala Leu Arg Ala Tyr Val Glu Arg Glu Arg Leu Ala Ser
165 170 175
Ala Ala His Gly Asp Pro Glu Arg Ile Asp Leu Ala Thr Ile Glu Ala
180 185 190
Ile Asn Thr Ile Leu Phe Gln Glu Glu Arg Trp Arg Tyr Pro Ser Lys
195 200 205
Gln Glu Met Phe Glu Ser Arg Phe Ser Glu Leu Ala Ala Val Thr Asp
210 215 220
Ser Lys Phe Gly Val Cys Leu Gly Thr Val Val Leu Tyr Gln Ala Val
225 230 235 240
Ala Gln Arg Leu Asp Leu Ser Leu Asp Pro Val Thr Pro Pro Gly His
245 250 255
Ile Tyr Leu Arg Tyr Lys Asp Lys Val Asn Ile Glu Thr Thr Ser Gly
260 265 270
Gly Arg His Leu Pro Thr Glu Arg Tyr Cys Glu Cys Ile Lys Glu Ser
275 280 285
Gln Leu Lys Val Arg Ser Gln Met Glu Leu Ile Gly Leu Thr Phe Met
290 295 300
Asn Arg Gly Ala Phe Phe Leu Gln Lys Gly Glu Phe Leu Gln Ala Ser
305 310 315 320
Leu Ala Tyr Glu Gln Ala Gln Ser Tyr Leu Ser Asp Glu Gln Ile Ser
325 330 335
Asp Leu Leu Gly Ile Thr Tyr Val Leu Leu Gly
340 345

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<213>Chlamydia trachomatis
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Met Glu Lys Phe Ser Asp Ala Val Ser Glu Ala Leu Glu Lys Ala Phe
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Glu Leu Ala Lys Asn Ser Lys His Ser Tyr Val Thr Glu Asn His Leu
20 25 30
Leu Lys Ser Leu Leu Gln Asn Pro Gly Ser Leu Phe Cys Leu Val Ile
35 40 45
Lys Asp Val His Gly Asn Leu Gly Leu Leu Thr Ser Ala Val Asp Asp
50 55 60
Ala Leu Arg Arg Glu Pro Thr Val Val Glu Gly Thr Ala Val Ala Ser
65 70 75 80
Pro Ser Pro Ser Leu His Gln Leu Leu Leu Asn Ala His Gln Glu Ala

Search Report Text

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                85                  90                  95
Arg Ser Met Gly Asp Glu Tyr Leu Ser Gly Asp His Leu Leu Leu Ala
            100                 105                 110
Phe Trp Arg Ser Thr Lys Glu Pro Phe Ala Ser Trp Arg Lys Thr Val
        115                 120                 125
Lys Thr Thr Ser Glu Ala Leu Lys Glu Leu Ile Thr Lys Leu Arg Gln
    130                 135                 140
Gly Ser Arg Met Asp Ser Pro Ser Ala Glu Glu Asn Leu Lys Gly Leu
145                 150                 155                 160
Glu Lys Tyr Cys Lys Asn Leu Thr Val Leu Ala Arg Glu Gly Lys Leu
                165                 170                 175
Asp Pro Val Ile Gly Arg Asp Glu Glu Ile Arg Arg Thr Ile Gln Val
            180                 185                 190
Leu Ser Arg Arg Thr Lys Asn Asn Pro Met Leu Ile Gly Glu Pro Gly
        195                 200                 205
Val Gly Lys Thr Ala Ile Ala Glu Gly Leu Ala Leu Arg Ile Val Gln
    210                 215                 220
Gly Asp Val Pro Glu Ser Leu Lys Glu Lys His Leu Tyr Val Leu Asp
225                 230                 235                 240
Met Gly Ala Leu Ile Ala Gly Ala Lys Tyr Arg Gly Glu Phe Glu Glu
                245                 250                 255
Arg Leu Lys Ser Val Leu Lys Ser Val Glu Ala Ser Glu Gly Glu Cys
            260                 265                 270
Ile Leu Phe Ile Asp Glu Val His Thr Leu Val Gly Ala Gly Ala Thr
        275                 280                 285
Asp Gly Ala Met Asp Ala Ala Asn Leu Leu Lys Pro Ala Leu Ala Arg
    290                 295                 300
Gly Thr Leu His Cys Ile Gly Ala Thr Thr Leu Asn Glu Tyr Gln Lys
305                 310                 315                 320
Tyr Ile Glu Lys Asp Ala Ala Leu Glu Arg Arg Phe Gln Pro Ile Phe
                325                 330                 335
Val Thr Glu Pro Ser Leu Glu Asp Ala Val Phe Ile Leu Arg Gly Leu
            340                 345                 350
Arg Glu Lys Tyr Glu Ile Phe His Gly Val Arg Ile Thr Glu Gly Ala
        355                 360                 365
Leu Asn Ala Ala Val Val Leu Ser Tyr Arg Tyr Ile Thr Asp Arg Phe
    370                 375                 380
Leu Pro Asp Lys Ala Ile Asp Leu Ile Asp Glu Ala Ala Ser Leu Ile
385                 390                 395                 400
Arg Met Gln Ile Gly Ser Leu Pro Leu Pro Ile Asp Glu Lys Glu Arg
                405                 410                 415
Glu Leu Ser Ala Leu Ile Val Lys Gln Glu Ala Ile Lys Arg Glu Gln
            420                 425                 430
Ala Pro Ala Tyr Gln Glu Glu Ala Glu Asp Met Xaa Xaa Ala Ile Asp
        435                 440                 445
Arg Val Lys Glu Glu Leu Ala Ala Leu Arg Leu Arg Trp Asp Glu Glu
    450                 455                 460
Lys Gly Leu Ile Ala Gly Leu Lys Glu Lys Lys Asn Ala Leu Glu Asn
465                 470                 475                 480
Leu Lys Phe Ala Glu Glu Glu Ala Glu Arg Thr Ala Asp Tyr Asn Arg
                485                 490                 495
Val Ala Glu Leu Arg Tyr Ser Leu Ile Pro Ser Leu Glu Glu Glu Ile
            500                 505                 510
His Leu Ala Glu Glu Ala Leu Asn Gln Arg Asp Gly Arg Leu Leu Gln
        515                 520                 525
Glu Glu Val Asp Glu Arg Leu Ile Ala Gln Val Val Ala Asn Trp Thr
    530                 535                 540
Gly Ile Pro Val Gln Lys Met Leu Glu Gly Glu Ser Glu Lys Leu Leu
545                 550                 555                 560
Val Leu Glu Glu Ser Leu Glu Glu Arg Val Val Gly Gln Pro Phe Ala
                565                 570                 575
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Ile Ala Ala Val Ser Asp Ser Ile Arg Ala Ala Arg Val Gly Leu Ser
580 585 590
Asp Pro Gln Arg Pro Leu Gly Val Phe Leu Phe Leu Gly Pro Thr Gly
595 600 605
Val Gly Lys Thr Glu Leu Ala Lys Ala Leu Ala Glu Leu Leu Phe Asn
610 615 620
Lys Glu Glu Ala Met Ile Arg Phe Asp Met Thr Glu Tyr Met Glu Lys
625 630 635 640
His Ser Val Ser Lys Leu Ile Gly Ser Pro Pro Gly Tyr Val Gly Tyr
645 650 655
Glu Glu Gly Gly Ser Leu Ser Glu Ala Leu Arg Arg Arg Pro Tyr Ser
660 665 670
Val Val Leu Phe Asp Glu Ile Glu Lys Ala Asp Lys Glu Val Phe Asn
675 680 685
Ile Leu Leu Gln Ile Phe Asp Asp Gly Ile Leu Thr Asp Ser Lys Lys
690 695 700
Arg Lys Val Asn Cys Lys Asn Ala Leu Phe Ile Met Thr Ser Asn Ile
705 710 715 720
Gly Ser Gln Glu Leu Ala Asp Tyr Cys Thr Lys Lys Gly Thr Ile Val
725 730 735
Asp Lys Glu Ala Val Leu Ser Val Val Ala Pro Ala Leu Lys Asn Tyr
740 745 750
Phe Ser Pro Glu Phe Ile Asn Arg Ile Asp Asp Ile Leu Pro Phe Val
755 760 765
Pro Leu Thr Thr Glu Asp Ile Val Lys Ile Val Gly Ile Gln Met Asn
770 775 780
Arg Val Ala Leu Arg Leu Leu Glu Arg Lys Ile Ser Leu Thr Trp Asp
785 790 795 800
Asp Ser Leu Val Leu Phe Leu Ser Glu Gln Gly Tyr Asp Ser Ala Phe
805 810 815
Gly Ala Arg Pro Leu Lys Arg Leu Ile Gln Gln Lys Val Val Thr Met
820 825 830
Leu Ser Lys Ala Leu Leu Lys Gly Asp Ile Lys Pro Gly Met Ala Val
835 840 845
Glu Leu Thr Met Ala Lys Asp Val Val Val Phe Lys Ile Lys Thr Asn
850 855 860
Pro Ala Val
865

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<213>Chlamydia trachomatis

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20 25 30
Ser Trp Ile Gln Pro Ala Leu Ile Ala Leu Pro Gln Gln Val Ala Asn
35 40 45
Met Leu Leu Ala Ser Pro Glu Leu Gln Glu Tyr His Phe Tyr Leu Lys
50 55 60
Lys Leu Phe Arg Leu Ala Pro His Thr Gly Thr Ser Arg Glu Glu Lys
65 70 75 80
Ile Leu Ala Ser Ser Phe Pro Ala Leu Glu Val Ala Tyr Lys Thr Phe
85 90 95
Cys Ser Leu Thr Asp Ser Glu Ile Pro Phe Gly Glu Ala Val Asp Ser
100 105 110
Glu Gly Lys Ser His Pro Leu Ser His Ala Leu Ala Ser Leu Tyr Met
115 120 125
Gln Ser Thr Asp Arg Glu Leu Arg Lys Asn Thr Tyr Gln Lys Gln Cys
130 135 140

6pg5.ST25.txt

Gln Arg His His Gly Tyr Arg Leu Ser Leu Ala Asn Leu Leu Asn Gly
145 150 155 160
Lys Ile Gln Ala His Leu Phe Asn Ala Lys Ala Arg Asp Tyr Asp Ser
165 170 175
Cys Leu Glu Ala Ala Leu Phe Gln Asn Asp Ile Ser Thr Ser Val Val
180 185 190
Thr Thr Leu Ile Asp Thr Val Lys Gln His Thr His Leu Ile Thr Lys
195 200 205
Tyr Phe Gln Leu Lys Gln Lys Ala Leu Gly Leu Ser Asp Phe His Phe
210 215 220
Tyr Asp Val Tyr Ala Pro Leu Val Ala Ser Glu Ala Ser Arg His Tyr
225 230 235 240
Ser Tyr Gln Glu Ala Val Thr Leu Ile Cys Asp Ser Leu Ser Pro Leu
245 250 255
Gly Asn Asp Tyr Val Glu Thr Leu Arg Lys Gly Leu Thr Ser Asp Gly
260 265 270
Trp Val Asp Lys Tyr Glu Asn Thr Asn Lys Arg Ser Gly Ala Tyr Ser
275 280 285
Ser Gly Cys Tyr Asn Ser Lys Pro Tyr Ile Leu Leu Asn Tyr Thr Gly
290 295 300
Thr Leu Tyr Asp Val Ser Val Val Ala His Glu Gly Gly His Ser Met
305 310 315 320
His Ser Phe Leu Ser His Lys His Gln Ser Tyr His Glu Ala Gln Tyr
325 330 335
Pro Ile Phe Leu Ala Glu Ile Ala Ser Thr Leu Asn Glu Thr Leu Leu
340 345 350
Met Glu Phe Leu Leu Lys Gln Ala Pro Ser Lys Glu Glu Lys Ile Ala
355 360 365
Ile Leu Ser Arg Ser Leu Asp Thr Val Phe Ala Thr Leu Phe Arg Gln
370 375 380
Thr Leu Phe Ala Ala Phe Glu Leu Glu Met His Ser Ala Ala Glu Gln
385 390 395 400
Gly Leu Pro Leu Thr Glu Glu Phe Phe Ser Gln Ser Tyr Glu Lys Leu
405 410 415
Gln Arg Leu Phe Tyr Gly Asp Cys Ile Thr Phe Asp Glu His Ser Cys
420 425 430
Ile Glu Ser Ala Arg Ile Pro His Phe Tyr Tyr Asn Phe Tyr Val
435 440 445

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<213>Chlamydia trachomatis
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Thr Thr Thr Ser Met Phe Asn Gln Tyr Ala Thr Gly Ile Ile Ala Ser
20 25 30
Leu Cys Phe Ser Glu Arg Ile Leu Ser Gly Glu Glu Gly Ala Gln Glu
35 40 45
Ala Tyr Leu Thr Phe Leu Arg Ser Gly Gly Ser Asp Phe Pro Ile Glu
50 55 60
Ile Leu Lys Lys Ser Gly Leu Asp Met Thr Ser Ile Ser Ser Tyr Ala
65 70 75 80

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1 5 10 15
Ile Leu Val Lys Arg Glu Glu Glu Ala Ser Thr Ala Arg Gly Gly Ile

```
            20                  25                  30
Ile Leu Pro Asp Thr Ala Lys Lys Lys Gln Asp Arg Ala Glu Val Val
        35                  40                  45
Ala Leu Gly Thr Gly Lys Lys Asp Asp Lys Gly Gln Gln Leu Pro Phe
    50                  55                  60
Glu Val Gln Val Gly Asp Ile Val Leu Ile
65                  70
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            20                  25                  30
Pro Lys Gly Arg His Val Val Ile Asp Lys Ser Phe Gly Ser Pro Gln
        35                  40                  45
Val Thr Lys Asp Gly Val Thr Val Ala Lys Glu Val Glu Leu Ala Asp
    50                  55                  60
Lys His Glu Asn Met Gly Ala Gln Met Val Lys Glu Val Ala Ser Lys
65                  70                  75                  80
Thr Ala Asp Lys Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala
                85                  90                  95
Glu Ala Ile Tyr Thr Glu Gly Leu Arg Asn Val Thr Ala Gly Ala Asn
            100                 105                 110
Pro Met Asp Leu Lys Arg Gly Ile Asp Lys Ala Val Lys Val Val Val
        115                 120                 125
Asp Gln Val Lys Lys Ile Ser Lys Pro Val Gln His His Lys Glu Ile
    130                 135                 140
Ala Gln Val Ala Thr Ile Ser Ala Asn Asn Asp Ala Glu Ile Gly Asn
145                 150                 155                 160
Leu Ile Ala Lys Ala Met Glu Lys Val Gly Lys Asn Gly Ser Ile Thr
                165                 170                 175
Val Glu Glu Ala Lys Gly Phe Glu Thr Val Leu Asp Val Val Glu Gly
            180                 185                 190
Met Asn Phe Asn Arg Gly Tyr Leu Ser Ser Tyr Phe Ala Thr Asn Pro
        195                 200                 205
Glu Thr Gln Glu Cys Val Leu Glu Asp Ala Leu Val Leu Ile Tyr Asp
    210                 215                 220
Lys Lys Ile Ser Gly Ile Lys Asp Phe Leu Pro Val Leu Gln Gln Val
225                 230                 235                 240
Ala Glu Ser Gly Arg Pro Leu Leu Ile Ile Ala Glu Asp Ile Glu Gly
                245                 250                 255
Glu Leu

<210>348
<211>224
<212>PRT
<213>Chlamydia trachomatis
<400>348
Arg Arg Thr Leu Ala Thr Leu Val Val Asn Arg Ile Arg Gly Gly Phe
 1               5                  10                  15
Arg Val Cys Ala Val Lys Ala Pro Gly Phe Gly Asp Arg Arg Lys Ala
            20                  25                  30
Met Leu Glu Asp Ile Ala Ile Leu Thr Gly Gly Gln Leu Ile Ser Glu
        35                  40                  45
Glu Leu Gly Met Lys Leu Glu Asn Ala Asn Leu Ala Met Leu Gly Lys
    50                  55                  60
Ala Lys Lys Val Ile Val Ser Lys Glu Asp Thr Thr Ile Val Glu Gly
65                  70                  75                  80
```

Met Gly Glu Lys Glu Ala Leu Glu Ala Arg Cys Glu Ser Ile Lys Lys
85 90 95
Gln Ile Glu Asp Ser Ser Ser Asp Tyr Asp Lys Glu Lys Leu Gln Glu
100 105 110
Arg Leu Ala Lys Leu Ser Gly Gly Val Ala Val Ile Arg Val Gly Ala
115 120 125
Ala Thr Glu Ile Glu Met Lys Glu Lys Lys Asp Arg Val Asp Asp Ala
130 135 140
Gln His Ala Thr Ile Ala Ala Val Glu Glu Gly Ile Leu Pro Gly Gly
145 150 155 160
Gly Thr Ala Leu Ile Arg Cys Ile Pro Thr Leu Glu Ala Phe Leu Pro
165 170 175
Met Leu Thr Asn Glu Asp Glu Gln Ile Gly Ala Arg Ile Val Leu Lys
180 185 190
Ala Leu Ser Ala Pro Leu Lys Gln Ile Ala Ala Asn Ala Gly Lys Glu
195 200 205
Gly Ala Ile Ile Phe Gln Gln Val Met Ser Phe Cys Glu Arg Arg Ile
210 215 220

<210>349
<211>90
<212>PRT
<213>Chlamydia trachomatis
<400>349
Asn Lys Leu Leu Gln Thr Gln Glu Lys Lys Val Leu Ser Ser Ser Asn
1 5 10 15
Lys Leu Cys Pro Ser Ala Asn Glu Gly Tyr Asp Ala Leu Arg Asp Ala
20 25 30
Tyr Thr Asp Met Leu Glu Ala Gly Ile Leu Asp Pro Ala Lys Val Thr
35 40 45
Arg Ser Ala Leu Glu Ser Ala Ala Ser Val Ala Gly Leu Leu Leu Thr
50 55 60
Thr Glu Ala Leu Ile Ala Glu Ile Pro Glu Glu Lys Pro Ala Ala Ala
65 70 75 80
Pro Ala Met Pro Gly Ala Gly Met Asp Tyr
85 90

<210>350
<211>262
<212>PRT
<213>Chlamydia trachomatis
<400>350
Met Phe Lys Leu Ile Lys Ser Ala Phe Leu Ile Ala Cys Cys Ile Val
1 5 10 15
Gly Tyr Phe Trp Ile Lys Lys Glu Ser Ile Val Glu Gln Trp Leu Ser
20 25 30
Gln Gln Leu His Ala Gln Val Thr Val Gly Asn Ile Ser Pro Gly Leu
35 40 45
Ser Lys Thr Lys Ile Arg His Leu Cys Ile His Asn Pro Leu Ser Ser
50 55 60
Asp Lys Tyr Pro Tyr Ala Val Glu Ile Glu Tyr Val Ser Leu Lys Tyr
65 70 75 80
Ser Ile Val Thr Met Ile Leu Ser Lys Lys Ile Asp Ile Ser Asp Val
85 90 95
Ile Leu Gln Gly Thr Ser Leu Thr Val Phe Pro Cys Glu Gly Ser Ser
100 105 110
Lys Thr Asn Trp Ser Phe Phe Trp Asp Ser Phe Ile Asn His Ser Asn
115 120 125
Glu Leu Thr Lys Phe His Ser Ser Gln Phe Glu Ser Ser Val Asp Thr
130 135 140
Ile Pro Val Phe Ile Lys Arg Cys Leu Cys Thr Asn Thr Arg Val Ser
145 150 155 160
Gly Ile Lys Asn Asn Tyr Lys Glu Ile Pro Thr Thr Pro Val Pro Ser

Sequence Listing

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                165                 170                 175
Leu Glu Phe Arg Gly Ser Leu Ser Cys Ser Pro Leu Pro Thr Leu Gly
            180                 185                 190
Glu Thr Ala Arg Ala Leu Leu Tyr Leu Ile Val Glu Glu Ser Phe Tyr
        195                 200                 205
His Ala Asn Val Ser Gly Asp Ile Ala Arg Pro Leu Ser Lys Gln Ala
    210                 215                 220
Arg Ala Tyr Phe Asn Ser Ser Leu Ser Asp Tyr Ser Tyr Leu Lys Lys
225                 230                 235                 240
Arg Gly Ala Phe Pro Ser Asn Leu Thr Asn Glu Leu Glu Gly Phe Met
                245                 250                 255
Lys Glu Leu Leu Phe Arg
            260
<210>351
<211>258
<212>PRT
<213>Chlamydia trachomatis
<400>351
Leu Gln Gln Arg Phe Phe Tyr Met Asn Val Ser Asp Leu Leu Asn Ile
  1               5                  10                  15
Leu Asn Glu Leu Leu His Pro Glu Tyr Phe Ser Asp Tyr Gly Pro Asn
            20                  25                  30
Gly Leu Gln Val Gly Asn Thr Gln Thr Ala Ile Arg Lys Val Ala Val
        35                  40                  45
Ala Val Thr Ala Asp Leu Ala Thr Ile Glu Lys Ala Ile Ala Cys Glu
    50                  55                  60
Ala Asn Val Leu Leu Val His His Gly Ile Phe Trp Lys Gly Met Pro
65                  70                  75                  80
Tyr Pro Ile Thr Gly Ile Leu Tyr Gln Arg Met Gln Arg Leu Met Glu
                85                  90                  95
Gly Asn Ile Gln Leu Ile Ala Tyr His Leu Pro Leu Asp Ala His Thr
            100                 105                 110
Thr Ile Gly Asn Asn Trp Lys Val Ala Arg Asp Leu Gly Trp Glu Gln
        115                 120                 125
Leu Glu Ser Phe Gly Ser Ser Gln Pro Ser Leu Gly Val Lys Gly Val
    130                 135                 140
Phe Pro Glu Met Glu Val His Asp Phe Ile Ser Gln Leu Ser Ala Tyr
145                 150                 155                 160
Tyr Gln Thr Pro Val Leu Ala Lys Ala Leu Gly Gly Lys Lys Arg Val
                165                 170                 175
Ser Ser Ala Ala Leu Ile Ser Gly Gly Ala Tyr Arg Glu Ile Ser Glu
            180                 185                 190
Ala Lys Asn Gln Gln Val Asp Cys Phe Ile Thr Gly Asn Phe Asp Glu
        195                 200                 205
Pro Ala Trp Ser Leu Ala His Glu Leu Ala Ile His Phe Leu Ala Phe
    210                 215                 220
Gly His Thr Ala Thr Glu Lys Val Gly Pro Lys Ala Leu Ala Gln Tyr
225                 230                 235                 240
Leu Lys Gly Ala Gly Leu Glu Ser Val Val Phe Leu Asp Thr Asp Asn
                245                 250                 255
Pro Phe

<210>352
<211>341
<212>PRT
<213>Chlamydia trachomatis
<400>352
Val Cys Trp Tyr Asp Phe Thr Arg Ile Ser Met Ile Arg Thr Ala Phe
  1               5                  10                  15
Phe Gln Asp Lys Glu Cys Phe Pro Leu Glu Ala Leu Arg Ser Trp Phe
            20                  25                  30
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Leu Glu Ser Lys Arg Ser Phe Pro Trp Arg Asp Ser Pro Thr Pro Tyr
         35                  40                  45
Arg Val Trp Val Ser Glu Val Met Leu Gln Gln Thr Arg Ala Glu Val
     50                  55                  60
Val Val Pro Tyr Phe Leu Lys Trp Met Glu Arg Phe Pro Thr Leu Gln
 65                  70                  75                  80
Asp Leu Ala Gln Ala Arg Glu Ser Asp Val Val Gln Leu Trp Glu Gly
                 85                  90                  95
Leu Gly Tyr Tyr Ser Arg Ala Arg Asn Leu Leu Ala Gly Ala Arg Val
            100                 105                 110
Ile Thr Glu Ile Phe Gly Gly Glu Ile Pro Asn Asp Leu Ala Leu Leu
        115                 120                 125
Ser Ser Ile Lys Gly Ile Gly Ser Tyr Thr Ala Asn Ala Ile Leu Ala
    130                 135                 140
Phe Ala Phe Lys Gln Lys Asn Pro Ala Val Asp Gly Asn Val Leu Arg
145                 150                 155                 160
Val Met Ser Arg Leu Phe Ala Ile Glu Glu Ser Ile Asp Arg Met Asn
                165                 170                 175
Thr Arg Arg Glu Ile Thr Gly Leu Cys Glu Ser Leu Leu Pro Asp Gln
            180                 185                 190
Asp Pro Gln Val Ile Ala Glu Ser Phe Ile Glu Leu Gly Ala Arg Ile
        195                 200                 205
Cys Lys Lys Gln Pro Leu Cys Glu Gln Cys Pro Leu Arg Ser Phe Cys
    210                 215                 220
Thr Ala Tyr Arg Gln Gly Thr Met Glu Gln Tyr Pro Val Arg Asn Thr
225                 230                 235                 240
Arg Ala Ala Ile Ser Arg Leu Phe Arg Ala Val Val Ile Val Leu Tyr
                245                 250                 255
Lys Asp Gln Val Leu Met Thr Lys Arg Glu Glu Lys Glu Ile Met Ala
            260                 265                 270
Gly Leu Tyr Glu Phe Pro Tyr Tyr Gln Leu Pro Lys Glu Asp Cys Cys
        275                 280                 285
Asp Ile Glu Lys Ile Ile His Leu Val Gln Lys Asp Tyr Gly Glu Thr
    290                 295                 300
Leu His Phe Val Ser Ser Leu Pro Ser Gln Lys Gln Val Phe Thr Xaa
305                 310                 315                 320
Ile Ala Leu His Tyr Ser His Met Phe Ser Thr Xaa Asn Ile Val Tyr
                325                 330                 335
Arg Ile Ala Thr Arg
            340
<210>353
<211>276
<212>PRT
<213>Chlamydia trachomatis
<400>353
Trp Ile Met Gln Glu Phe Ile Gly Thr Ala Asp Arg His Ile Arg Leu
  1               5                  10                  15
Ser Ser Phe Leu Arg Thr Ser Leu Pro His Leu Pro Lys Lys Thr Ile
             20                  25                  30
Leu Glu Ser Val Arg Tyr His Gly Cys Arg Val Asn Gly Arg Ile Glu
         35                  40                  45
Arg Phe Glu Ser Tyr Lys Leu Gln Pro Gly Asp Arg Val Ser Leu Gln
     50                  55                  60
Ile Ile Glu His Ser Ser Pro Gln Leu Leu Trp Glu Asp Glu His Leu
 65                  70                  75                  80
Cys Ile Tyr Asn Lys Pro Ala Lys Gln Thr Ser Glu Asp Leu Ala His
                 85                  90                  95
Gln Leu Asn Val His Leu Val His Arg Leu Asp Arg Asp Thr Ser Gly
            100                 105                 110
Cys Ile Leu Phe Ala Lys His Ala Lys Ala Ser Ser Leu Ile Thr Gln
        115                 120                 125
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Leu Phe Lys Asn Arg Glu Ile Asp Lys Arg Tyr Ile Ala Leu Val Phe
    130                 135                 140
Gly Gln Pro Arg Gln Glu Ser Gly Ile Ile Thr Thr Tyr Thr Ala Pro
145                 150                 155                 160
Cys Tyr Arg Arg Thr Gly Ala Val Leu Phe Gly Asn Thr Asp Gln Asn
                165                 170                 175
Ser Gly Lys Ile Thr Ile Thr Lys Trp Glu Ile Leu Thr Arg Tyr Pro
            180                 185                 190
Lys Tyr Thr Leu Leu Leu Cys Arg Pro Val Thr Gly Arg Thr His Gln
        195                 200                 205
Ile Arg Leu His Met Lys Thr Ile Gly His Pro Ile Val Gly Asp Val
    210                 215                 220
Asp Tyr Gly Asn Gln Glu Gln Pro Lys Asn Val Val Arg Thr Leu Leu
225                 230                 235                 240
His Ala Ala Ser Leu Ala Phe Ile Ser Pro Phe Ser Asn Glu Lys Ile
                245                 250                 255
Glu Ile Ser Ser Leu Thr Pro Ser Gln Asp Pro Tyr Pro Phe Tyr Ala
            260                 265                 270
Asp Phe Arg Pro
        275
<210>354
<211>673
<212>PRT
<213>Chlamydia trachomatis
<400>354
Asn Phe Leu Leu Lys Ile Lys Asn Pro Tyr Lys Asn Pro Gly Val Lys
  1               5                  10                  15
Gly Met Ser Phe Gly Ile Gly Ser Ala Cys Ser Ser Leu Trp Ser Arg
            20                  25                  30
Leu Cys Gly Ser Ser Gly Ser Glu Gly Asn Ser Glu Glu Gly Val Thr
        35                  40                  45
Ser Ser Gly Ser Asp Ala Ala Ser Gly Ser Gly Ala Ala Ser Ala Val
    50                  55                  60
Cys Gln Gln Pro Thr Ser Ser Ala Ser Thr Glu Gly Asn Gly Pro Ser
65                  70                  75                  80
Val Gln Ile Pro Met Val Gly Thr Tyr Ser Ala Asn Val Gln Ser Leu
                85                  90                  95
Val Asn Gln Gly His Gly Gly Arg Gly Phe Val Asn Arg Cys Tyr Gln
            100                 105                 110
Lys Tyr Ser Ala Ser Gly Val Ser Leu Thr Ser Ile Ser Ile Gly Ala
        115                 120                 125
Gly Asp Ser Val Asp Gly Pro Leu Pro Ser Val Val Ile Thr Gln Gln
    130                 135                 140
Pro Gln Gly Ser Gly Ser Ser Ala Arg Gly Ala Gly Ser Leu Gln Met
145                 150                 155                 160
Gly Ala Val Leu Ser Gly Met Ser Thr Leu Thr Gly Asn Ser Ile Phe
                165                 170                 175
Asp Leu Phe Gly Glu Ser Gln Ile Thr Asn Leu Ile Gly Asp Ala Val
            180                 185                 190
Asp Gly Thr Ser Thr Ser Ser Ser Pro Leu Arg Asp Ala Thr Lys Gly
        195                 200                 205
Ala Ser Thr Ala Asp Leu Ile Ala Leu Phe Leu Ala Leu Gly Gly Ser
    210                 215                 220
Gly Ser Gln Gly Val Asn Ser Pro Leu Val Ala Thr Leu Leu Ser Arg
225                 230                 235                 240
Tyr Ser Leu Ser Gly Ser Leu Asp Ala Lys Lys Leu Gln Glu Leu Leu
                245                 250                 255
Glu Ala Leu Lys Lys Leu Gln Asn Asp Ala Pro Thr Ser Asp Gly Ala
            260                 265                 270
Arg Pro Gly Leu Gly Glu Cys Cys Thr His Leu Cys Gly Ala Leu Ser
        275                 280                 285
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Ser Ser Pro Asn Pro Ile Val Ser Ala Val Gly Ile Ala Gly Thr Gly
    290                 295                 300
Leu Thr Glu Leu Leu Met Leu Ala Ala Gln Ser Gln Arg Val Arg Lys
305                 310                 315                 320
Cys Ala Leu Leu Cys His Asp Ala Cys Lys Pro Cys Cys Ala Ser Ala
                325                 330                 335
Cys Gly Tyr Pro Ser Cys Gly Cys Ala Asp Gly Glu Gly Gly Cys Gly
            340                 345                 350
Ser Phe Gly Ala Leu Val Cys Ser Cys Ala Glu Leu Trp Cys Cys Gln
        355                 360                 365
Glu Ser Pro Ala Glu Glu Ala Asn Leu Glu Glu Tyr Ala Arg Lys Leu
    370                 375                 380
Lys Asp Leu Glu Met Ala Val Gly Ser Thr Thr Phe Met Leu Gly Leu
385                 390                 395                 400
His Asn Leu Gly Ile Ser Phe Ser Asp Leu Val Lys Gly Asn Phe Thr
                405                 410                 415
Asn Leu Pro Thr Pro Glu Gln Leu Glu Thr Ala Cys Lys Asp Ala Val
            420                 425                 430
Ser Ser Leu Gly Lys Leu Met Met Arg Ile Thr His Glu Lys Trp Leu
        435                 440                 445
Gly Arg Leu Cys Ser Cys Ala Gly Ile Leu Asp Asn Pro Phe Trp Lys
    450                 455                 460
Arg Ala Leu Cys Ser Gly Leu Ala Gly Gly Thr His Met Leu Ser Leu
465                 470                 475                 480
Gln Asp Leu Thr Ser Arg Val Lys Val Ile Thr Ser Ser Gly Asn Lys
                485                 490                 495
Gln Glu Ala Glu Asn Leu Asp Leu Glu Leu Leu Leu Pro Ala Leu Ser
            500                 505                 510
Ser Leu Gln Val Thr Gly Thr Glu Glu Asp Cys Asp Asp Glu Gly Gln
        515                 520                 525
Gly Leu Asn Thr Asp Gln Leu Thr Met Leu Leu Cys Lys Phe Cys Ser
    530                 535                 540
Val Leu Ser Ala Ala Ile Gly Asn Asp Arg Arg Pro Ile Trp Leu Thr
545                 550                 555                 560
Pro Lys Gln Ile Thr Glu Ile Leu Cys Val Cys Met Val Met Ser Gly
                565                 570                 575
Ile Ser Ile Val Gly Gly Pro Ser Asn Gln Ser Ala Glu Tyr Gln Glu
            580                 585                 590
Phe Gln Asn Thr Val Met Gln Glu Ser Leu Thr His Leu Gln Ser Ser
        595                 600                 605
Leu Arg Val Ser Lys Arg Thr Asn Asn Arg Thr Arg Ala Glu Val Arg
    610                 615                 620
Lys Leu Val Val Lys Tyr Glu Ala Gln Ser Ser Phe Leu Ser Leu Leu
625                 630                 635                 640
Glu Gly Leu Arg Asp Pro Asn Ser Lys Glu Ser Lys Asp Leu Met Arg
                645                 650                 655
Glu Cys Phe Ala Ser Trp Ala Gln Lys Ala Gly Val Gln Ser Ser Ser
            660                 665                 670
Ile
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<210>355
<211>287
<212>PRT
<213>Chlamydia trachomatis
<400>355

```
Leu Met Leu Lys Ile Asp Leu Thr Gly Lys Ile Ala Phe Ile Ala Gly
  1               5                  10                  15
Ile Gly Asp Asp Asn Gly Tyr Gly Trp Gly Ile Ala Lys Met Leu Ala
            20                  25                  30
Glu Ala Gly Ala Thr Ile Leu Val Gly Thr Trp Val Pro Ile Tyr Lys
        35                  40                  45
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Ile Phe Ser Gln Ser Trp Glu Leu Gly Lys Phe Asn Ala Ser Arg Glu
     50                  55                  60
Leu Ser Asn Gly Glu Leu Leu Thr Phe Ala Lys Ile Tyr Pro Met Asp
 65                  70                  75                  80
Ala Ser Phe Asp Thr Pro Glu Asp Ile Pro Gln Glu Ile Leu Glu Asn
                85                  90                  95
Lys Arg Tyr Lys Asp Leu Ser Gly Tyr Thr Val Ser Glu Val Val Glu
            100                 105                 110
Gln Val Lys Lys Asp Phe Gly His Ile Asp Ile Leu Val His Ser Leu
        115                 120                 125
Ala Asn Ser Pro Glu Ile Ala Lys Pro Leu Leu Asp Thr Ser Arg Lys
    130                 135                 140
Gly Tyr Leu Ala Ala Leu Ser Thr Ser Ser Tyr Ser Phe Ile Ser Leu
145                 150                 155                 160
Leu Ser His Phe Gly Pro Ile Met Asn Ala Gly Ala Ser Thr Ile Ser
                165                 170                 175
Leu Thr Tyr Leu Ala Ser Met Arg Ala Val Pro Gly Tyr Gly Gly Gly
            180                 185                 190
Met Lys Pro Ala Lys Ala Ala Leu Glu Ser Asp Thr Lys Val Leu Ala
        195                 200                 205
Trp Glu Ala Gly Arg Arg Trp Gly Val Arg Val Asn Thr Ile Ser Ala
    210                 215                 220
Gly Pro Leu Ala Ser Arg Ala Gly Lys Ala Ile Gly Phe Ile Glu Arg
225                 230                 235                 240
Met Val Asp Tyr Tyr Gln Asp Trp Ala Pro Leu Pro Ser Pro Met Glu
                245                 250                 255
Ala Glu Gln Val Gly Ala Ala Ala Ala Phe Leu Val Ser Pro Leu Leu
            260                 265                 270
Ala Gln Leu Arg Glu Lys Leu Ser Met Trp Ile Thr Glu Pro Met
        275                 280                 285
<210>356
<211>298
<212>PRT
<213>Chlamydia trachomatis
<400>356
Met Ser Leu Gln Lys Leu Leu Val Thr Asp Ile Asp Gly Thr Ile Thr
  1                 5                  10                  15
His Gln Ser His Leu Leu His Asp Arg Val Val Lys Ala Leu His Gln
             20                  25                  30
Tyr Tyr Asp Ser Gly Trp Gln Leu Phe Phe Leu Thr Gly Arg Tyr Phe
         35                  40                  45
Ser Tyr Ala Tyr Pro Leu Phe Gln Asn Phe Ser Val Pro Phe Leu Leu
     50                  55                  60
Gly Ser Gln Asn Gly Ser Ser Val Trp Ser Ser Thr Asp Lys Glu Phe
 65                  70                  75                  80
Ile Tyr Phe Arg Ser Leu Ser Arg Asp Phe Leu Cys Val Leu Glu Lys
                85                  90                  95
Tyr Phe Glu Asp Leu Asp Leu Ile Ala Cys Ile Glu Ser Gly Ala Ser
            100                 105                 110
Asn Arg Asp Val Tyr Phe Arg Lys Gly Leu Gly Lys Thr Ser Gln Glu
        115                 120                 125
Leu Lys Ala Ile Leu Asp Ala Val Tyr Phe Pro Thr Pro Glu Ala Ala
    130                 135                 140
Arg Leu Leu Val Asp Val Gln Gly His Leu Ser Glu Glu Phe Ser Tyr
145                 150                 155                 160
Glu Asp Phe Ala Ile Ala Lys Phe Phe Gly Glu Arg Glu Glu Val Lys
                165                 170                 175
Lys Ile Met Asp Arg Phe Ile Gln Ser Pro Glu Val Ser Ser Gln Val
            180                 185                 190
Thr Met Asn Tyr Met Arg Trp Pro Phe Asp Phe Lys Tyr Ala Val Leu
        195                 200                 205
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Leu Leu Thr Leu Lys Asp Val Ser Lys Gly Phe Ala Val Asp Gln Val
    210                 215                 220
Val Gln Thr Phe Tyr Lys Glu Asn Lys Pro Phe Ile Met Ala Ser Gly
225                 230                 235                 240
Asp Asp Val Asn Asp Ile Asp Leu Leu Ser Arg Gly Asp Phe Lys Ile
                245                 250                 255
Val Ile Gln Thr Ala Pro Glu Glu Met His Gly Leu Ala Asp Phe Leu
            260                 265                 270
Ala Pro Pro Ala Lys Asp Leu Gly Ile Leu Ser Ala Trp Glu Ala Gly
        275                 280                 285
Glu Leu Arg Tyr Lys Gln Leu Val Asn Pro
    290                 295
<210>357
<211>161
<212>PRT
<213>Chlamydia trachomatis
<400>357
Asp Pro Ala Arg Lys Arg Ser Phe Met Leu Arg Leu Phe Gln His Ile
  1               5                  10                  15
Leu Cys Phe Leu Glu Glu Val Pro Ser Phe Val Asp Val Leu Gln Glu
            20                  25                  30
Leu Ser Phe Val Asn Glu Ala Phe Ser Gly Ser Met Arg Trp Glu Val
        35                  40                  45
Gly Lys Met Leu Gly Ser Leu Leu Leu Leu Leu Gly Ile Phe Gly Gly
    50                  55                  60
Gly Cys Leu Leu Phe Arg Arg Phe Leu Arg Ser Arg Gly His Leu Pro
65                  70                  75                  80
Ser Gly Asn Ser Ser Ile Lys Ile Leu Asp Gln Arg Val Leu Ala Ser
                85                  90                  95
Lys Thr Ser Ile Tyr Val Ile Lys Val Ala Asn Lys Thr Leu Val Val
            100                 105                 110
Ala Glu Arg Gly Glu Arg Val Thr Leu Leu Ser Glu Phe Pro Pro Asn
        115                 120                 125
Thr Asp Leu Asn Glu Leu Ile Gln Lys Asp Gln Lys Lys Pro Ser Thr
    130                 135                 140
Ser Arg Gly Glu Met Leu Ser Gly Phe Leu Lys Gln Phe Lys Glu Lys
145                 150                 155                 160
Lys

<210>358
<211>135
<212>PRT
<213>Chlamydia trachomatis
<400>358
Val His Gly Ser Phe Arg Cys Arg Thr Ile Phe Arg Lys Leu Ser Ile
  1               5                  10                  15
Met Phe Gly Val Gly Ile Asp Ile Ile Glu Ile Asp Arg Ile Arg Lys
            20                  25                  30
Ser Tyr Gln Thr Tyr Gly Asp Arg Phe Leu Lys Lys Ile Phe Thr Glu
        35                  40                  45
Gly Glu Arg Val Tyr Cys Phe Ser Lys Ser Asn Pro Tyr Ala Ser Leu
    50                  55                  60
Ala Ala Arg Phe Ala Ala Lys Glu Ala Val Ala Lys Ala Leu Gly Thr
65                  70                  75                  80
Gly Ile Gly Lys Leu Leu Lys Trp Lys Glu Ile Glu Met Arg Arg Asp
                85                  90                  95
Ser Arg Gln Pro Gln Val Val Val Pro Glu Ala Leu Leu Cys Ser Leu
            100                 105                 110
Gly Val Lys Arg Val Leu Leu Ser Val Ser His Ser Arg Glu Tyr Ala
        115                 120                 125
Thr Ala Val Ala Ile Ala Glu
```

130 135

<210>359
<211>183
<212>PRT
<213>Chlamydia trachomatis
<400>359

Val Leu Ala Lys Gly Arg Asn Thr Cys Ala Val Cys Asp Gly Ala Ser
1 5 10 15
Pro Ile Phe Arg Asp Lys Asp Leu Phe Val Val Gly Gly Gly Asp Ser
20 25 30
Ala Leu Glu Glu Ala Met Phe Leu Thr Arg Tyr Gly Lys Arg Val Phe
35 40 45
Val Val His Arg Arg Asp Thr Leu Arg Ala Ser Lys Val Met Val Asn
50 55 60
Lys Ala Gln Ala Asn Glu Lys Ile Phe Phe Leu Trp Asn Ser Glu Ile
65 70 75 80
Val Lys Ile Ser Gly Asp Thr Leu Val Arg Ser Ile Asp Ile Tyr Asn
85 90 95
Asn Val Asp Lys Thr Thr Thr Thr Met Glu Ala Ala Gly Val Phe Phe
100 105 110
Ala Ile Gly His Gln Pro Asn Thr Ala Phe Leu Gly Gly Gln Val Ala
115 120 125
Leu Asp Glu Asn Gly Tyr Ile Ile Thr Glu Lys Gly Ser Ser Arg Thr
130 135 140
Ser Val Pro Gly Val Phe Ala Ala Gly Asp Val Gln Asp Lys Tyr Tyr
145 150 155 160
Arg Gln Ala Ile Thr Ser Ala Gly Ser Gly Cys Met Ala Ala Leu Asp
165 170 175
Val Glu Arg Phe Leu Glu Asn
180

<210>360
<211>194
<212>PRT
<213>Chlamydia trachomatis
<400>360

Met Asn Val Val Cys Gly Lys Ser Arg Val Gly Tyr Ser Ser Phe Phe
1 5 10 15
Cys Lys Ser Arg Glu Pro Phe Ser Cys Val Phe Lys Ala Leu Leu Ser
20 25 30
Lys Phe Ile Leu Gly Val Leu Met Thr His Ala Lys Leu Val Ile Ile
35 40 45
Gly Ser Gly Pro Ala Gly Tyr Thr Ala Ala Ile Tyr Ala Ser Arg Ala
50 55 60
Leu Leu Thr Pro Val Leu Phe Glu Gly Phe Phe Ser Gly Ile Ala Gly
65 70 75 80
Gly Gln Leu Met Thr Thr Thr Glu Val Glu Asn Phe Pro Gly Phe Pro
85 90 95
Glu Gly Val Leu Gly His Gln Leu Met Asp Leu Met Lys Thr Gln Ala
100 105 110
Gln Arg Phe Gly Thr Gln Val Leu Ser Lys Asp Ile Thr Ala Val Asp
115 120 125
Phe Ser Val Arg Pro Phe Val Leu Lys Ser Gly Glu Glu Thr Phe Thr
130 135 140
Cys Asp Ala Cys Ile Ile Ala Thr Gly Ala Ser Ala Lys Arg Leu Ser
145 150 155 160
Ile Pro Gly Ala Gly Asp Asn Glu Phe Trp Gln Lys Gly Val Thr Leu
165 170 175
Ala Leu Phe Val Thr Glu Pro Leu Pro Phe Phe Val Thr Lys Ile Cys
180 185 190
Leu Leu

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<210>361
<211>569
<212>PRT
<213>Chlamydia trachomatis
<400>361

```
Met Pro Lys Gln Ala Asp Tyr Thr Trp Gly Ala Lys Lys Asn Leu Asp
  1               5                  10                  15
Thr Ile Ala Cys Leu Pro Glu Asp Val Lys Gln Phe Lys Asp Leu Leu
            20                  25                  30
Tyr Ala Ile His Gly Phe Thr Ala Thr Glu Glu Glu Pro Thr Ser Glu
        35                  40                  45
Val His Pro Gly Ala Ile Leu Lys Gly Thr Val Val Asp Ile Ser Lys
    50                  55                  60
Asp Phe Val Val Val Asp Val Gly Leu Lys Ser Glu Gly Val Ile Pro
65                  70                  75                  80
Met Ser Glu Phe Ile Asp Ser Ser Glu Gly Leu Thr Val Gly Ala Glu
                85                  90                  95
Val Glu Val Tyr Leu Asp Gln Thr Glu Asp Asp Glu Gly Lys Val Val
            100                 105                 110
Leu Ser Arg Glu Lys Ala Thr Arg Gln Arg Gln Trp Glu Tyr Ile Leu
        115                 120                 125
Ala His Cys Glu Glu Gly Ser Ile Val Lys Gly Gln Ile Thr Arg Lys
    130                 135                 140
Val Lys Gly Gly Leu Ile Val Asp Ile Gly Met Glu Ala Phe Leu Pro
145                 150                 155                 160
Gly Ser Gln Ile Asp Asn Lys Lys Ile Lys Asn Leu Asp Asp Tyr Val
                165                 170                 175
Gly Lys Val Cys Glu Phe Lys Ile Leu Lys Ile Asn Val Asp Arg Arg
            180                 185                 190
Asn Val Val Val Ser Arg Arg Glu Leu Leu Glu Ala Glu Arg Ile Ser
        195                 200                 205
Lys Lys Ala Glu Leu Ile Glu Gln Ile Thr Ile Gly Glu Arg Arg Lys
    210                 215                 220
Gly Ile Val Lys Asn Ile Thr Asp Phe Gly Val Phe Leu Asp Leu Asp
225                 230                 235                 240
Gly Ile Asp Gly Leu Leu His Ile Thr Asp Met Thr Trp Lys Arg Ile
                245                 250                 255
Arg His Pro Ser Glu Met Val Glu Leu Asn Gln Glu Leu Glu Val Ile
            260                 265                 270
Ile Leu Ser Val Asp Lys Glu Lys Gly Arg Val Ala Leu Gly Leu Lys
        275                 280                 285
Gln Lys Glu His Asn Pro Trp Glu Asp Ile Glu Lys Lys Tyr Pro Pro
    290                 295                 300
Gly Lys Arg Val Arg Gly Lys Ile Val Lys Leu Leu Pro Tyr Gly Ala
305                 310                 315                 320
Phe Ile Glu Ile Glu Glu Gly Ile Glu Gly Leu Ile His Val Ser Glu
                325                 330                 335
Met Ser Trp Val Lys Asn Ile Val Asp Pro Asn Glu Val Val Asn Lys
            340                 345                 350
Gly Asp Glu Val Glu Val Val Val Leu Ser Ile Gln Lys Asp Glu Gly
        355                 360                 365
Lys Ile Ser Leu Gly Leu Lys Gln Thr Lys His Asn Pro Trp Asp Asn
    370                 375                 380
Ile Glu Glu Lys Tyr Pro Ile Gly Leu Arg Val Thr Ala Glu Ile Lys
385                 390                 395                 400
Asn Leu Thr Asn Tyr Gly Ala Phe Val Glu Leu Glu Pro Gly Ile Glu
                405                 410                 415
Gly Leu Ile His Ile Ser Asp Met Ser Trp Ile Lys Lys Val Ser His
            420                 425                 430
Pro Ser Glu Leu Phe Lys Lys Gly Asn Thr Val Glu Ala Val Ile Leu
        435                 440                 445
```

```
Ser Val Asp Lys Glu Ser Lys Lys Ile Thr Leu Gly Val Lys Gln Leu
    450                 455                 460
Thr Pro Asn Pro Trp Asp Glu Ile Glu Ala Met Phe Pro Val Gly Ser
465                 470                 475                 480
Asp Ile Ser Gly Val Val Thr Lys Ile Thr Ala Phe Gly Ala Phe Val
                485                 490                 495
Glu Leu Gln Asn Gly Ile Glu Gly Leu Ile His Val Ser Glu Leu Ser
            500                 505                 510
Glu Lys Pro Phe Ala Lys Ile Glu Asp Val Leu Ser Ile Gly Asp Lys
        515                 520                 525
Val Ser Ala Lys Val Ile Lys Leu Asp Pro Asp His Lys Lys Val Ser
    530                 535                 540
Leu Ser Ile Lys Glu Phe Leu Ala His Gly Gly Asp Ala Gly His Asp
545                 550                 555                 560
Ala Glu Glu Glu Ser Ser Asp Arg Asp
                565
<210>362
<211>226
<212>PRT
<213>Chlamydia trachomatis
<400>362
Val Lys Ser Lys His Lys Ser Arg Ala Leu Gly Leu Cys Ser Val Ser
  1               5                  10                  15
Ile Ile Phe Phe Ala Phe Phe Pro Leu Pro Ile Arg Gly Val Leu Met
            20                  25                  30
Asn Lys Asp Leu Val Ala Ile Phe Asp Tyr Met Glu Arg Glu Lys Gly
        35                  40                  45
Ile Gln Arg Ser Thr Ile Val Gly Ala Ile Glu Ser Ala Leu Lys Ile
    50                  55                  60
Ala Ala Lys Lys Thr Leu Arg Asp Asp Ala Asn Val Ser Val Ser Ile
65                  70                  75                  80
Asn Pro Arg Thr Gly Asp Ile Glu Val Phe Cys Glu Lys Gln Ile Val
                85                  90                  95
Glu Lys Cys Gln Asn Pro Ser Lys Glu Ile Pro Leu Asp Lys Ala Arg
            100                 105                 110
Glu Tyr Asp Pro Asp Cys Gln Ile Gly Gln Tyr Met Asp Val Pro Phe
        115                 120                 125
Ile Ser Asp Gln Phe Gly Arg Ile Ala Ala His Ala Ala Arg Gln Ile
    130                 135                 140
Ile Gly Gln Lys Leu Arg His Ala Glu Arg Asp Val Ile Tyr Glu Glu
145                 150                 155                 160
Tyr Arg His Arg Lys Asn Glu Ile Ile Ser Gly Val Val Lys Ser Phe
                165                 170                 175
Ala Arg Gly Ala Asn Leu Val Val Asp Leu Gly Lys Val Glu Gly Leu
            180                 185                 190
Leu Pro Ala Arg Phe Tyr Pro Lys Thr Glu Lys His Lys Val Gly Asp
        195                 200                 205
Lys Ile Tyr Ala Leu Leu Tyr Glu Tyr Arg Asn Leu Lys Met Val Glu
    210                 215                 220
Leu Lys
225
<210>363
<211>256
<212>PRT
<213>Chlamydia trachomatis
<400>363
Asp Leu Cys Ala Ser Leu Arg Val Gln Glu Ser Glu Asn Gly Gly Ala
  1               5                  10                  15
Glu Val Ile Leu Ser Arg Ser His Pro Glu Phe Val Lys Gln Leu Phe
            20                  25                  30
Val Gln Glu Val Pro Glu Leu Glu Glu Gly Ser Val Glu Ile Val Lys
```

```
         35                  40                  45
Ile Ala Arg Glu Ala Gly Tyr Arg Thr Lys Met Ala Val Arg Ser Ser
     50                  55                  60
Asp Pro Gln Thr Asp Ala Val Gly Ala Phe Val Gly Met Arg Gly Ser
 65                  70                  75                  80
Arg Ile Lys Asn Ile Ile Arg Glu Leu Asn Asp Glu Lys Ile Asp Val
                 85                  90                  95
Val Asn Tyr Ser Pro Val Ser Thr Glu Leu Leu Gln Asn Leu Leu Tyr
            100                 105                 110
Pro Val Glu Ile Gln Lys Ile Ala Ile Leu Glu Asp Asp Lys Val Ile
        115                 120                 125
Ala Ile Ile Val Gln Asp Ser Asp Tyr Ala Thr Val Ile Gly Lys Arg
    130                 135                 140
Gly Ile Asn Ala Arg Leu Ile Ser Gln Ile Leu Gly Tyr Glu Leu Glu
145                 150                 155                 160
Val Gln Arg Met Ser Glu Tyr Asn Lys Leu Leu Glu Ile Gln Arg Leu
                165                 170                 175
Gln Leu Ala Glu Phe Glu Asp Pro Arg Leu Asp Gln Pro Leu Glu Val
            180                 185                 190
Glu Gly Ile Asn Thr Leu Ile Val Gln Asn Leu Glu His Ala Gly Tyr
        195                 200                 205
Asp Thr Ile Arg Lys Ile Leu Leu Ala Ser Ala Ser Glu Leu Ala Ser
    210                 215                 220
Val Pro Gly Ile Ser Leu Glu Leu Ala Tyr Lys Ile Leu Glu Gln Val
225                 230                 235                 240
Ser Lys Tyr Gly Glu Gly Lys Val Asp Glu Lys Pro Gln Val Glu Asp
                245                 250                 255
```

<210>364
<211>903
<212>PRT
<213>Chlamydia trachomatis
<400>364

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Leu Asn Arg Ser Ala Asn Met Glu Lys Ala Lys Leu Thr Lys Asn Leu
  1                 5                  10                  15
Lys Xaa Lys Ile Lys Asn Ala Gln Leu Thr Lys Ala Xaa Gly Leu Asp
             20                  25                  30
Lys Leu Lys Gln Lys Leu Ala Gln Ala Gly Ser Ser Asp Thr Lys Asn
         35                  40                  45
Ser Pro Ala Ser Lys Ala Gln Thr Lys Glu Lys Ser Ser Lys Lys Thr
     50                  55                  60
Ala Gly Thr Pro Ala Pro Ala Pro Glu Val Asp Leu Gly Ala Thr Glu
 65                  70                  75                  80
Ser Thr Ala Arg Arg Ile Arg Ala Lys Asp Arg Ser Ser Phe Ala Ala
                 85                  90                  95
Glu Pro Thr Val Thr Thr Ala Leu Pro Gly Asp Ala Ser His Leu Thr
            100                 105                 110
Leu Asp Ala Ile Pro Ala Ile Lys Ala Pro Glu Ile Thr Ser Val Thr
        115                 120                 125
Gln Lys Glu Gln Thr Leu Arg Glu Cys Thr Asp Thr Ser Ser Val Gln
    130                 135                 140
Gln Glu Glu Lys Lys Glu Ser Ser Glu Glu Thr Ser Pro Glu Thr Pro
145                 150                 155                 160
Glu Arg Ile Glu Glu Thr Pro Ile Ile Arg Thr Arg Thr Glu Pro Lys
                165                 170                 175
Ser Val Val Ser Ile Lys Pro Lys Phe Gly Pro Thr Gly Lys His Ile
            180                 185                 190
Asn His Leu Leu Ala Lys Thr Phe Lys Ala Pro Ala Lys Glu Thr Lys
        195                 200                 205
Ala Ala Ser Thr Glu Glu Thr Thr Gln Gln Gln Pro Arg Gln Asn Asp
    210                 215                 220
Ala Ala Ser His Asn Asn Lys Gln Gln Pro Ser Gly Thr Ser Ser Arg
```

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```
225                 230                 235                 240
Pro Ala Ser Ser Ala Pro Ser Tyr Arg Arg Glu Ser Thr Ser Asn Asn
                245                 250                 255
Asn Asn Asn Ala Lys Arg Gly Ser Glu Arg Asp Arg Ser Lys Arg Ser
            260                 265                 270
Asp Glu Ser Val Lys Ala Phe Thr Gly Arg Asp Arg Tyr Gly Leu Asn
        275                 280                 285
Glu Gly Ser Ser Glu Glu Asp Lys Trp Arg Lys Lys Arg Val His Lys
    290                 295                 300
Thr Lys Lys Gln Ala Glu Glu His Val Val Gln Cys Pro Ala His Ile
305                 310                 315                 320
Lys Ile Ala Leu Pro Ile Thr Val Lys Asp Leu Ala Ala Glu Met Lys
                325                 330                 335
Leu Lys Ala Ser Glu Leu Ile Gln Lys Leu Phe Ile His Gly Met Thr
            340                 345                 350
Tyr Val Val Asn Asp Val Leu Asp Ser Gln Thr Val Val Glu Tyr Ile
        355                 360                 365
Gly Leu Glu Phe Gly Cys Thr Ile Glu Ile Asp Ser Ser Ala Lys Glu
    370                 375                 380
Lys Leu Cys Leu Val Glu Asn Thr Val Arg Asp Glu Val Asn Ala Thr
385                 390                 395                 400
Asp Pro Glu Lys Leu Ile Ile Arg Ser Pro Ile Val Ala Phe Met Gly
                405                 410                 415
His Val Asp His Gly Lys Thr Thr Ile Ile Asp Ala Leu Arg Gln Ser
            420                 425                 430
Asn Met Ala Ala Ser Glu Ala Gly Ala Ile Thr Gln His Thr Gly Ala
        435                 440                 445
Phe Lys Cys Thr Thr Pro Val Gly Glu Ile Thr Val Leu Asp Thr Pro
    450                 455                 460
Gly His Glu Ala Phe Ser Ala Met Arg Ala Arg Gly Ala Glu Val Cys
465                 470                 475                 480
Asp Ile Val Val Leu Val Val Ala Gly Asp Glu Gly Ile Lys Glu Gln
                485                 490                 495
Thr Ile Glu Ala Ile Glu His Ala Lys Gly Ala Asn Ile Thr Ile Val
            500                 505                 510
Val Ala Ile Asn Lys Cys Asp Lys Pro Lys Leu Gln Cys Arg Asn Ser
        515                 520                 525
Val Pro Ser Val Ser Arg Ile Arg Ser Leu Leu Pro Glu Ala Trp Gly
    530                 535                 540
Gly Ser Ile Ala Thr Ile Asn Thr Ser Ala Lys Thr Gly Glu Gly Leu
545                 550                 555                 560
Gln Asp Leu Leu Glu Met Leu Ala Leu Gln Ala Glu Val Leu Glu Leu
                565                 570                 575
Lys Ala Asp Pro Ser Ala Arg Ala Arg Gly Leu Val Ile Glu Ser Glu
            580                 585                 590
Leu His Lys Gly Leu Gly Ala Val Ala Thr Val Leu Val Gln Asn Gly
        595                 600                 605
Thr Leu His Leu Gly Glu Ala Leu Val Phe Asn Asp Cys Tyr Gly Lys
    610                 615                 620
Val Lys Thr Met His Asp Glu His Asn Gln Leu Leu Gln Ser Ala Thr
625                 630                 635                 640
Pro Ser Thr Pro Val Leu Ile Thr Gly Leu Ser Ala Ile Pro Lys Ala
                645                 650                 655
Gly Asp Pro Phe Ile Val Val Lys Asn Glu Lys Val Ala Lys Glu Ile
            660                 665                 670
Ile Ser Ala Arg Leu Ala Gly Gln Gln Arg Ser Ala Ala Leu Gln Lys
        675                 680                 685
Lys Arg Pro Asn Phe Asp Ala Val Leu Gln Asn Lys Lys Thr Leu Lys
    690                 695                 700
Leu Ile Ile Lys Ala Asp Val Gln Gly Ser Ile Glu Ala Leu Ala His
705                 710                 715                 720
```

Ser Ile Leu Asn Ile Arg Ser Glu Lys Val Asp Val Glu Ile Leu Ser
725 730 735
Ser Gly Val Gly Asp Ile Ser Glu Ser Asp Ile Arg Leu Ala Ser Ala
740 745 750
Ser Lys Ala Thr Val Ile Gly Phe His Thr Ser Val Glu Ser His Ala
755 760 765
Glu Pro Leu Ile Lys Asn Leu Asn Val Lys Val Cys Leu Phe Asp Ile
770 775 780
Ile Tyr His Ala Val Asp Ala Ile Lys Glu Ile Met Thr Gly Leu Leu
785 790 795 800
Asp Pro Ile Ala Glu Glu Lys Asn Leu Gly Ala Ala Glu Ile Lys Ala
805 810 815
Thr Phe Lys Ser Ser Gln Leu Gly Thr Ile Tyr Gly Cys Leu Val Thr
820 825 830
Glu Gly Thr Val Val Arg Asn Gln Lys Ile Arg Ile Ile Arg Asp Lys
835 840 845
Glu Val Leu Trp Lys Gly Ser Leu Ser Ser Leu Lys Arg Leu Lys Glu
850 855 860
Asp Val Lys Glu Val Lys Lys Gly Met Glu Cys Gly Ile Leu Leu Asp
865 870 875 880
Asn Tyr Gln Gln Ala Gln Val Gly Asp Ile Leu Gln Cys Tyr Glu Val
885 890 895
Ile Tyr His Pro Gln Thr Leu
900

<210>365
<211>123
<212>PRT
<213>Chlamydia trachomatis
<400>365
Met Ala Glu Asn Arg Arg Met Lys Lys Val Asn Ala Met Leu Arg Glu
1 5 10 15
Ala Ile Ala Lys Val Ile Leu Lys Asp Val Lys His Pro Lys Ile Ser
20 25 30
Asn Arg Trp Ile Thr Ile Thr Arg Val Ser Leu Ser Arg Asp Leu Gln
35 40 45
Ser Ala Cys Val Tyr Val Ser Ile Met Pro His Glu Asn Ser Gln Glu
50 55 60
Glu Thr Leu Ala Ala Leu Lys Ala Ser Ala Gly Phe Ile Ala Phe Gln
65 70 75 80
Ala Ser Lys Asp Leu Val Leu Lys Tyr Phe Pro Asp Leu Asn Phe Tyr
85 90 95
Val Glu Asp Ile Phe Ser Pro Gln Asp His Ile Glu Ser Leu Leu Leu
100 105 110
Lys Ile Ala Glu Gln Asp Lys Lys Thr Asn Pro
115 120

<210>366
<211>241
<212>PRT
<213>Chlamydia trachomatis
<400>366
Met Glu Leu Ala Thr Glu Ser Ile Glu Gly Val Leu Leu Val Asp Lys
1 5 10 15
Pro Gln Gly Arg Thr Ser Phe Ser Leu Ile Arg Ser Leu Val Arg Leu
20 25 30
Ile Gly Val Lys Lys Ile Gly His Ala Gly Thr Leu Asp Pro Phe Ala
35 40 45
Thr Gly Val Met Val Met Leu Ile Gly Arg Lys Phe Thr Arg Leu Ser
50 55 60
Asp Ile Met Leu Phe Glu Asp Lys Glu Tyr Ala Ala Val Ala His Leu
65 70 75 80
Gly Thr Thr Thr Asp Thr Tyr Asp Cys Asp Gly Lys Ile Val Gly Arg

```
                85                  90                  95
Ser Lys Lys Val Pro Thr Met Asp Glu Val Leu Thr Cys Thr Ser Tyr
            100                 105                 110
Phe Gln Gly Glu Ile Gln Gln Val Pro Pro Met Phe Ser Ala Lys Lys
        115                 120                 125
Val Gln Gly Lys Lys Leu Tyr Glu Tyr Ala Arg Gln Gly Leu Ser Ile
    130                 135                 140
Glu Arg Arg Phe Ala Thr Val Thr Val Asn Leu Arg Leu Val Lys Tyr
145                 150                 155                 160
Glu Tyr Pro Arg Leu His Phe Val Val Gln Cys Ser Lys Gly Thr Tyr
                165                 170                 175
Ile Arg Ser Ile Ala His Glu Leu Gly Asn Met Leu Gly Cys Gly Ala
            180                 185                 190
Tyr Leu Glu Glu Leu Arg Arg Leu Arg Ser Gly Ser Phe Ser Ile Asp
        195                 200                 205
Gln Cys Ile Asp Gly Asn Leu Leu Asp Glu Pro Glu Phe Asn Val Ser
    210                 215                 220
Pro Tyr Leu Arg Asp Ala Asn Gly Leu Ile Leu Gln Pro Ala Pro Val
225                 230                 235                 240
Leu
```

Sequence Listing

<210>367
<211>307
<212>PRT
<213>Chlamydia trachomatis
<400>367

```
Met Tyr Leu Leu Ile Tyr Val Met Gln Met Asp Leu Phe Tyr Ser Leu
  1               5                  10                  15
Leu Pro Ser Ser Asn Pro Ile Glu Ser Val Thr Ile Gly Phe Phe Asp
             20                  25                  30
Gly Cys Xaa Leu Xaa His Gln Ala Leu Leu Ser Phe Leu Thr Lys Phe
         35                  40                  45
Pro Gly Lys Ser Gly Val Ile Thr Phe Ser Gln His Pro Glu His Thr
     50                  55                  60
Leu Ser Asn Ser Pro Pro Glu Thr Ile Thr Ser Leu Glu Glu Arg Ile
 65                  70                  75                  80
Gln Leu Leu Ala Gly Cys Gly Ile Asp Tyr Leu Ala Val Leu Pro Phe
                85                  90                  95
Asn Gln Glu Ile Ala Asn Gln Glu Ala Glu Leu Phe Ile Gln Ser Ile
            100                 105                 110
Tyr Lys Thr Leu His Pro Ser Arg Ile Val Leu Gly Tyr Asp Ser Arg
        115                 120                 125
Leu Gly Lys Gly Gly Leu Gly Thr Ala Gln Thr Leu Arg Pro Phe Ala
    130                 135                 140
Ala Ser Leu Gly Ile Ser Leu Glu Glu Val Pro Pro Leu Gln Ile Glu
145                 150                 155                 160
Gly Thr Ile Val Ser Ser Arg Lys Ile Arg Gln Phe Leu Arg Glu Lys
                165                 170                 175
Asp Leu Cys Ser Ala Glu Lys Phe Leu Gly Arg Pro Phe Ala Tyr Thr
            180                 185                 190
Gly Lys Val Ala His Gly Arg Gly Ile Gly Thr Ser Phe Gly Tyr Ala
        195                 200                 205
Thr Ile Asn Leu Pro Leu Thr His Ser Leu Leu Pro Leu Gly Val Tyr
    210                 215                 220
Thr Cys Thr Ile Val Ile Glu Gly Phe Ser Tyr Ala Gly Val Met Asn
225                 230                 235                 240
Leu Gly Met Ala Pro Thr Met Gln Arg His Gln Leu Cys Leu Glu Ala
                245                 250                 255
His Ile Leu Asp Phe Ser Glu Asp Leu Tyr Asp Lys Ser Ile Thr Val
            260                 265                 270
Ile Leu Glu Gln Phe Leu Arg Glu Glu Lys Leu Phe Ser Ser Lys Asp
```

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        275                 280                 285
Glu Leu Val Leu Ala Ile Gln Glu Asp Ile Arg Gln Ala Arg Leu Asn
    290                 295                 300
Lys Asn Arg
305
<210>368
<211>348
<212>PRT
<213>Chlamydia trachomatis
<400>368
Met Lys Met Gly Gln Thr Glu Cys Gly Ile Val Gly Leu Pro Asn Val
  1               5                  10                  15
Gly Lys Ser Gly Leu Phe Asn Ala Leu Thr Gly Ala Gln Val Ala Ser
             20                  25                  30
Cys Asn Tyr Pro Phe Cys Thr Ile Asp Pro Asn Val Gly Ile Val Pro
         35                  40                  45
Val Ile Asp Pro Arg Leu Glu Thr Leu Ala Arg Ile Ser Gln Ser Gln
     50                  55                  60
Lys Ile Ile Tyr Ala Asp Met Lys Phe Val Asp Ile Ala Gly Leu Val
 65                  70                  75                  80
Lys Gly Ala Ala Ser Gly Ala Gly Leu Gly Asn Arg Phe Leu Ser His
                 85                  90                  95
Ile Arg Glu Thr His Ala Ile Ala His Val Val Arg Cys Phe Asp Asn
            100                 105                 110
Asp Asp Ile Thr His Val Ser Gly Lys Ile Asp Pro Glu Glu Asp Ile
        115                 120                 125
Ala Val Ile Asn Leu Glu Leu Val Leu Ala Asp Phe Ser Ser Ala Thr
    130                 135                 140
Ser Val Arg Glu Lys Leu Gly Lys Gln Ala Lys Gly Lys Lys Asp Ile
145                 150                 155                 160
Gly Gln Leu Leu Pro Leu Leu Asp Arg Val Val Asp His Leu Glu Ser
                165                 170                 175
Gly Asn Pro Val Arg Thr Leu Ser Leu Ser Leu Glu Glu Lys Val Leu
            180                 185                 190
Leu Lys Pro Tyr Pro Phe Leu Thr Gly Lys Pro Met Leu Tyr Ile Ala
        195                 200                 205
Asn Ile Asp Glu Asp Ser Leu Thr Asp Leu Asp Asn Pro Tyr Val Gln
    210                 215                 220
Lys Val Arg Glu Ile Ala Lys Arg Glu Glu Ala Asn Val Val Pro Ile
225                 230                 235                 240
Cys Val Lys Leu Glu Glu Glu Ile Leu Ser Leu Pro Leu Glu Glu Arg
                245                 250                 255
Gln Asp Phe Leu His Ser Leu Gly Leu Gln Glu Ser Gly Leu Asn Arg
            260                 265                 270
Leu Val Ala Ser Ala Tyr His Thr Leu Gly Leu Ile Ser Tyr Phe Thr
        275                 280                 285
Thr Gly Pro Gln Glu Thr Arg Ala Trp Thr Ile Ser Lys Gly Val Thr
    290                 295                 300
Ala Ala Glu Ala Ala Gly Glu Ile His Ser Asp Ile Gln Arg Gly Phe
305                 310                 315                 320
Ile Arg Ala Glu Val Val Thr Met Glu Asp Ile Val Ala Tyr Asp Gly
                325                 330                 335
Arg Ala Gly Ala Arg Glu Ala Gly Lys Leu Arg Ala
            340                 345
<210>369
<211>360
<212>PRT
<213>Chlamydia trachomatis
<400>369
Met Gly Glu Lys Thr Glu Lys Ala Thr Pro Lys Arg Leu Arg Asp Ala
  1               5                  10                  15
```

Arg Lys Lys Gly Gln Val Ala Lys Ser Gln Asp Phe Pro Ser Ala Ile
20 25 30
Thr Phe Ile Val Ser Met Phe Leu Thr Phe Ser Leu Ala Ser Phe Phe
35 40 45
Ala Glu His Leu Gly Ser Phe Leu Val Ser Ile Phe Lys Thr Ala Pro
50 55 60
Gln Asn His Asp Pro His Leu Ala Ile Tyr Tyr Leu Lys Asn Cys Leu
65 70 75 80
Ile Leu Ile Leu Thr Val Ser Leu Pro Leu Leu Gly Ala Val Gly Phe
85 90 95
Val Gly Leu Leu Ile Gly Phe Leu Ile Val Gly Pro Thr Phe Ser Thr
100 105 110
Glu Val Phe Lys Pro Asp Leu Lys Lys Phe Asn Pro Ile Asp Asn Leu
115 120 125
Lys Gln Lys Phe Lys Val Lys Thr Phe Ile Glu Leu Leu Lys Ser Ile
130 135 140
Phe Lys Ile Ser Gly Ala Ala Leu Ile Leu Tyr Ile Val Leu Lys Asn
145 150 155 160
Arg Val Glu Leu Val Ile Glu Thr Ala Gly Val Pro Pro Leu Val Thr
165 170 175
Ala Gln Val Phe Lys Glu Ile Leu Tyr Lys Ala Val Thr Ser Ile Gly
180 185 190
Leu Phe Phe Leu Val Val Ala Val Ile Asp Leu Val Tyr Gln Arg His
195 200 205
Ser Phe Ala Lys Glu Leu Lys Met Glu Lys Phe Glu Val Lys Gln Glu
210 215 220
Phe Lys Asp Thr Glu Gly Asn Pro Glu Ile Lys Gly Arg Arg Arg Gln
225 230 235 240
Ile Ala Gln Glu Ile Ala Tyr Glu Asp Thr Ser Ser Gln Ile Lys His
245 250 255
Ala Ser Ala Val Val Ser Asn Pro Lys Asp Ile Ala Val Ala Ile Gly
260 265 270
Tyr Met Pro Glu Lys Tyr Lys Ala Pro Trp Ile Ile Ala Met Gly Val
275 280 285
Asn Leu Arg Ala Lys Arg Ile Ile Ala Glu Ala Glu Lys Tyr Gly Val
290 295 300
Pro Ile Met Arg Asn Val Pro Leu Ala His Gln Leu Leu Asp Glu Gly
305 310 315 320
Lys Glu Leu Lys Phe Ile Pro Glu Thr Thr Tyr Glu Ala Val Gly Glu
325 330 335
Ile Leu Leu Tyr Ile Thr Ser Leu Asn Ala Gln Asn Leu Glu Asn Lys
340 345 350
Asn Ile Asn Gln Phe Asp Asn Leu
355 360

<210>370
<211>130
<212>PRT
<213>Chlamydia trachomatis
<400>370
Met Asn Lys Leu Leu Asn Phe Val Ser Arg Thr Phe Gly Gly Asp Ala
1 5 10 15
Ala Leu Asn Met Ile Asn Lys Ser Ser Asp Leu Ile Leu Ala Met Trp
20 25 30
Met Leu Gly Val Val Leu Met Ile Ile Leu Pro Leu Pro Pro Ala Met
35 40 45
Val Asp Phe Met Ile Thr Ile Asn Leu Ala Ile Ser Val Phe Leu Leu
50 55 60
Met Val Ala Leu Tyr Ile Pro Ser Ala Leu Gln Leu Ser Val Phe Pro
65 70 75 80
Ser Leu Leu Leu Ile Thr Thr Met Phe Arg Leu Gly Ile Asn Ile Ser
85 90 95

```
Ser Ser Arg Gln Ile Leu Leu His Ala Tyr Ala Gly His Val Ile Gln
            100                 105                 110
Ala Ser Glu Thr Ser Ser Leu Glu Glu Thr Met Ser Leu Asp Leu Leu
        115                 120                 125
Ser Ser
    130
<210>371
<211>614
<212>PRT
<213>Chlamydia trachomatis
<400>371
His Phe Phe Leu Pro Thr Asn Ser Pro Ser Cys Leu Cys Trp Ser Arg
  1               5                  10                  15
Asp Pro Ser Phe Gly Asp Phe Val Val Gly Gly Asn Tyr Val Val Gly
             20                  25                  30
Phe Ile Ile Phe Leu Ile Ile Thr Ile Ile Gln Phe Ile Val Val Thr
         35                  40                  45
Lys Gly Ala Glu Arg Val Ala Glu Val Ala Ala Arg Phe Arg Leu Asp
     50                  55                  60
Ala Met Pro Gly Lys Gln Met Ala Ile Asp Ala Asp Leu Arg Ala Gly
 65                  70                  75                  80
Met Ile Asp Ala Thr Gln Ala Arg Asp Lys Arg Ser Gln Ile Gln Lys
                 85                  90                  95
Glu Ser Glu Leu Tyr Gly Ala Met Asp Gly Ala Met Lys Phe Ile Lys
            100                 105                 110
Gly Asp Val Ile Ala Gly Ile Val Ile Ser Leu Ile Asn Ile Val Gly
        115                 120                 125
Gly Leu Val Ile Gly Val Thr Met Lys Gly Met Thr Met Ala Gln Ala
    130                 135                 140
Ala His Ile Tyr Thr Leu Ile Thr Ile Gly Asp Gly Leu Val Ser Gln
145                 150                 155                 160
Ile Pro Ser Leu Leu Ile Ser Leu Thr Ala Gly Ile Val Thr Thr Arg
                165                 170                 175
Val Ser Ser Asp Lys Asp Thr Asn Leu Gly Lys Glu Ile Ser Ser Gln
            180                 185                 190
Leu Val Lys Glu Pro Arg Ala Leu Leu Leu Ser Ala Gly Ala Thr Leu
        195                 200                 205
Gly Ile Gly Phe Phe Lys Gly Phe Pro Leu Trp Ser Phe Ala Leu Met
    210                 215                 220
Ala Val Leu Phe Ala Val Leu Gly Ile Leu Leu Ile Thr Lys Lys Asn
225                 230                 235                 240
Ser Pro Gly Lys Lys Gly Gly Ala Ser Ser Thr Thr Thr Val Gly Ala
                245                 250                 255
Ala Asp Gly Ala Ala Ala Ser Gly Glu Asn Ser Asp Asp Tyr Ala Leu
            260                 265                 270
Thr Leu Pro Val Ile Leu Glu Leu Gly Lys Asp Leu Ser Lys Leu Ile
        275                 280                 285
Gln Gln Arg Thr Lys Ser Gly Gln Ser Phe Val Asp Asp Met Ile Pro
    290                 295                 300
Lys Met Arg Gln Ala Leu Tyr Gln Asp Ile Gly Ile Arg Tyr Pro Gly
305                 310                 315                 320
Ile His Val Arg Thr Asp Ser Pro Ser Leu Glu Gly Asn Asp Tyr Met
                325                 330                 335
Ile Leu Leu Asn Glu Val Pro Tyr Val Arg Gly Lys Ile Pro Pro Asn
            340                 345                 350
His Val Leu Thr Asn Glu Val Glu Glu Asn Leu Ser Arg Tyr Asn Leu
        355                 360                 365
Pro Phe Ile Thr Tyr Lys Asn Ala Ala Gly Leu Pro Ser Thr Trp Val
    370                 375                 380
Ser Thr Asp Ala Leu Thr Ile Leu Glu Lys Ala Ala Ile Lys Tyr Trp
385                 390                 395                 400
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Ser Pro Leu Glu Val Ile Ile Leu His Leu Ser Tyr Phe Phe His Arg
405 410 415
Asn Ser Gln Glu Phe Leu Gly Ile Gln Glu Val Arg Ser Met Ile Glu
420 425 430
Phe Met Glu Arg Ser Phe Pro Asp Leu Val Lys Glu Val Thr Arg Leu
435 440 445
Ile Pro Leu Gln Lys Leu Thr Glu Ile Phe Lys Arg Leu Val Gln Glu
450 455 460
Gln Ile Ser Ile Lys Asp Leu Arg Thr Ile Leu Glu Ser Leu Ser Glu
465 470 475 480
Trp Ala Gln Thr Glu Lys Asp Thr Val Leu Leu Thr Glu Tyr Val Arg
485 490 495
Ser Ser Leu Lys Leu Tyr Ile Ser Phe Lys Phe Ser Gln Gly Gln Ser
500 505 510
Ala Ile Ser Val Tyr Leu Leu Asp Pro Glu Ile Glu Glu Met Ile Arg
515 520 525
Gly Ala Ile Lys Gln Thr Ser Ala Gly Ser Tyr Leu Ala Leu Asp Pro
530 535 540
Asp Ser Val Asn Leu Ile Leu Lys Ser Met Arg Met Thr Ile Thr Pro
545 550 555 560
Thr Pro Pro Gly Gly Gln Pro Pro Val Leu Leu Thr Ala Ile Asp Val
565 570 575
Arg Arg Tyr Val Arg Lys Leu Ile Glu Thr Glu Phe Pro Asp Ile Ala
580 585 590
Val Ile Ser Tyr Gln Glu Val Leu Pro Glu Ile Arg Ile Gln Pro Leu
595 600 605
Gly Arg Ile Gln Ile Phe
610

<210>372
<211>421
<212>PRT
<213>Chlamydia trachomatis
<400>372
Met Thr Ala Ser Gly Gly Ala Gly Gly Leu Gly Ser Thr Gln Thr Val
1 5 10 15
Asp Val Ala Arg Ala Gln Ala Ala Ala Ala Thr Gln Asp Ala Gln Glu
20 25 30
Val Ile Gly Ser Gln Glu Ala Ser Glu Ala Ser Met Leu Lys Glu Cys
35 40 45
Glu Asp Leu Ile Asn Pro Ala Ala Ala Thr Arg Ile Xaa Lys Lys Glu
50 55 60
Glu Lys Phe Glu Ser Leu Glu Ala Arg Arg Lys Xaa Thr Ala Asp Lys
65 70 75 80
Ala Glu Lys Lys Ser Glu Ser Thr Glu Glu Lys Gly Asp Thr Pro Leu
85 90 95
Glu Asp Arg Phe Thr Glu Asp Leu Ser Glu Val Ser Gly Glu Asp Phe
100 105 110
Arg Gly Leu Lys Asn Ser Phe Asp Asp Asp Ser Ser Ser Asp Glu Ile
115 120 125
Leu Asp Ala Leu Thr Ser Lys Phe Ser Asp Pro Thr Ile Lys Asp Leu
130 135 140
Ala Leu Asp Tyr Leu Ile Gln Ile Ala Pro Ser Asp Gly Lys Leu Lys
145 150 155 160
Ser Ala Leu Ile Gln Ala Lys His Gln Leu Met Ser Gln Asn Pro Gln
165 170 175
Ala Ile Val Gly Gly Arg Asn Val Leu Leu Ala Ser Glu Thr Phe Ala
180 185 190
Ser Arg Ala Asn Thr Ser Pro Ser Ser Leu Arg Ser Leu Tyr Phe Gln
195 200 205
Val Thr Ser Ser Pro Ser Asn Cys Ala Asn Leu His Gln Met Leu Ala
210 215 220

```
Ser Tyr Ser Pro Ser Glu Lys Thr Ala Val Met Glu Phe Leu Val Asn
225                 230                 235                 240
Gly Met Val Ala Asp Leu Lys Ser Glu Gly Pro Ser Ile Pro Pro Ala
                245                 250                 255
Lys Leu Gln Val Tyr Met Thr Glu Leu Ser Asn Leu Gln Ala Leu His
            260                 265                 270
Ser Val Asp Ser Phe Phe Asp Arg Asn Ile Gly Asn Leu Glu Asn Ser
        275                 280                 285
Leu Lys His Glu Gly His Ala Pro Ile Pro Ser Leu Thr Thr Gly Asn
    290                 295                 300
Leu Thr Lys Thr Phe Leu Gln Leu Val Glu Asp Lys Phe Pro Ser Ser
305                 310                 315                 320
Ser Lys Ala Gln Lys Ala Leu Asn Glu Leu Val Gly Pro Asp Thr Gly
                325                 330                 335
Pro Gln Thr Glu Val Leu Asn Leu Phe Phe Arg Ala Leu Asn Gly Cys
            340                 345                 350
Ser Pro Arg Ile Phe Ser Gly Ala Glu Lys Lys Gln Gln Leu Ala Ser
        355                 360                 365
Val Ile Thr Asn Thr Leu Asp Ala Ile Asn Ala Asp Asn Glu Asp Tyr
    370                 375                 380
Pro Lys Pro Gly Asp Phe Pro Arg Ser Ser Phe Ser Ser Thr Pro Pro
385                 390                 395                 400
His Ala Pro Val Pro Gln Ser Glu Ile Pro Thr Ser Pro Thr Ser Thr
                405                 410                 415
Gln Pro Pro Ser Pro
            420
<210>373
<211>146
<212>PRT
<213>Chlamydia trachomatis
<400>373
Met Gln Asn Gln Phe Glu Gln Leu Leu Thr Glu Leu Gly Thr Gln Ile
  1               5                  10                  15
Asn Ser Pro Leu Thr Pro Asp Ser Asn Asn Ala Cys Ile Val Arg Phe
            20                  25                  30
Gly Tyr Asn Asn Val Ala Val Gln Ile Glu Glu Asp Gly Asn Ser Gly
        35                  40                  45
Phe Leu Val Ala Gly Val Met Leu Gly Lys Leu Pro Glu Asn Thr Phe
    50                  55                  60
Arg Gln Lys Ile Phe Lys Ala Ala Leu Ser Ile Asn Gly Ser Pro Gln
65                  70                  75                  80
Ser Asn Ile Lys Gly Thr Leu Gly Tyr Gly Glu Ile Ser Asn Gln Leu
                85                  90                  95
Tyr Leu Cys Asp Arg Leu Asn Met Thr Tyr Leu Asn Gly Glu Lys Leu
            100                 105                 110
Ala Arg Tyr Leu Val Leu Phe Ser Gln His Ala Asn Ile Trp Met Gln
        115                 120                 125
Ser Ile Ser Lys Gly Glu Leu Pro Asp Leu His Ala Leu Gly Met Tyr
    130                 135                 140
His Leu
145
<210>374
<211>388
<212>PRT
<213>Chlamydia trachomatis
<400>374
Met Pro Ser Leu Ser Gln Ser Arg Arg Ile Ile Gln Gln Ser Ser Ile
  1               5                  10                  15
Arg Lys Ile Trp Asn Gln Ile Asp Thr Ser Pro Lys His Gly Val Cys
            20                  25                  30
Val Pro Leu Phe Ser Leu His Thr Gln Glu Ser Cys Gly Ile Gly Glu
```

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         35                  40                  45
Phe Leu Asp Leu Ile Pro Met Ile Asp Trp Cys Ile Ser Cys Gly Phe
     50                  55                  60
Gln Ile Leu Gln Ile Leu Pro Ile Asn Asp Thr Gly Ser Cys Ser Ser
 65                  70                  75                  80
Pro Tyr Asn Ser Ile Ser Ser Ile Ala Leu Asn Pro Leu His Leu Ser
                 85                  90                  95
Ile Ser Ala Leu Pro Tyr Lys Glu Glu Val Pro Ala Ala Glu Thr Arg
            100                 105                 110
Ile Arg Glu Met Gln Gln Leu Ser Gln Leu Pro Gln Val His Tyr Glu
        115                 120                 125
Lys Val Arg Ser Met Lys Arg Asp Phe Phe Gln Glu Tyr Tyr Arg Val
    130                 135                 140
Cys Lys Gln Lys Lys Leu Thr Asp His Pro Asp Phe Tyr Ala Phe Cys
145                 150                 155                 160
Glu Gln Glu Lys Tyr Trp Leu His Pro Tyr Ala Leu Phe Arg Ser Ile
                165                 170                 175
Arg Glu His Leu Asp Asn Leu Pro Ile Asn His Trp Pro Thr Thr Tyr
            180                 185                 190
Thr Asp Leu Ser Gln Ile Thr Glu His Glu Arg Thr Phe Ala Glu Asp
        195                 200                 205
Ile Gln Phe His Ser Tyr Leu Gln Tyr Leu Cys Phe Gln Gln Met Thr
    210                 215                 220
Gln Val Arg Glu His Ala Asn Cys Lys Ser Cys Leu Ile Lys Gly Asp
225                 230                 235                 240
Ile Pro Ile Leu Ile Ser Lys Asp Ser Cys Asp Val Trp Phe Tyr Arg
                245                 250                 255
His Tyr Phe Ser Ser Ser Glu Ser Val Gly Ala Pro Pro Asp Leu Tyr
            260                 265                 270
Asn Ala Glu Gly Gln Asn Trp His Leu Pro Ile Tyr Asn Met Lys Thr
        275                 280                 285
Leu Gln Gln Asp Asn Tyr Leu Trp Trp Lys Glu Arg Leu Arg Tyr Ala
    290                 295                 300
Glu Asn Phe Tyr Ser Leu Tyr Arg Leu Asp His Ile Val Gly Leu Phe
305                 310                 315                 320
Arg Phe Trp Val Trp Asp Glu Ser Gly Cys Gly Arg Phe Glu Pro His
                325                 330                 335
Asp Pro Lys Asp Tyr Leu Ala Gln Gly Gln Asp Ile Leu Ser His Leu
            340                 345                 350
Leu Thr Ser Ser Ser Met Leu Pro Ile Gly Glu Asp Leu Gly Thr Ile
        355                 360                 365
Pro Ser Asp Val Lys Arg Met Leu Glu Ser Phe Ala Val Cys Gly Thr
    370                 375                 380
Arg Ile Pro Arg
385
<210>375
<211>106
<212>PRT
<213>Chlamydia trachomatis
<400>375
Leu Leu Gln Leu Pro Cys Arg Glu Ile Ala Ala Ser Glu Tyr Arg Lys
  1               5                  10                  15
Val Met Ser Lys Lys Cys Ala Leu Thr Gly Arg Lys Pro Arg Arg Gly
             20                  25                  30
Tyr Ser Tyr Ala Ile Arg Gly Ile Ser Lys Lys Lys Lys Gly Ile Gly
         35                  40                  45
Leu Lys Val Thr Gly Arg Thr Lys Arg Arg Phe Phe Pro Asn Met Met
     50                  55                  60
Thr Lys Arg Leu Trp Ser Thr Glu Glu Asn Arg Phe Leu Lys Leu Lys
 65                  70                  75                  80
Ile Ser Ala Ala Ala Leu Arg Leu Val Asp Lys Leu Gly Leu Asp Gln
```

85 90 95

Val Val Ala Arg Ala Lys Ser Lys Gly Phe
100 105

<210>376
<211>538
<212>PRT
<213>Chlamydia trachomatis
<400>376

Tyr Asp Val Phe Ser Leu Arg Ser Leu Val Asp Tyr Leu Arg Ser Gln
1 5 10 15
His Glu Leu Ile Asp Ile His Val Pro Val Asp Pro His Leu Glu Ile
20 25 30
Ala Glu Ile His Arg Arg Val Val Glu Arg Glu Gly Pro Ala Leu Leu
35 40 45
Phe His Gln Val Lys Gly Ser Pro Phe Pro Val Leu Thr Asn Leu Phe
50 55 60
Gly Thr Arg Arg Arg Val Asp Leu Leu Phe Pro Asp Leu Ser Ser Asp
65 70 75 80
Leu Phe Glu Gln Ile Ile His Leu Leu Ser Ser Pro Pro Ser Phe Ser
85 90 95
Ser Leu Trp Lys His Arg Ser Leu Phe Lys Arg Gly Ile Ser Ala Leu
100 105 110
Gly Met Arg Lys Arg His Leu Arg Ser Ser Pro Phe Leu Tyr Gln Asp
115 120 125
Ala Pro Asn Leu Ser Gln Leu Pro Met Leu Thr Ser Trp Pro Glu Asp
130 135 140
Gly Gly Pro Phe Leu Thr Leu Pro Leu Val Tyr Thr Gln Ser Pro Glu
145 150 155 160
Asn Gly Val Pro Asn Leu Gly Met Tyr Arg Met Gln Arg Phe Asp Lys
165 170 175
Glu Thr Leu Gly Leu His Phe Gln Ile Gln Lys Gly Gly Gly Ala His
180 185 190
Phe Phe Glu Ala Glu Gln Lys Lys Gln Asn Leu Pro Val Thr Val Phe
195 200 205
Leu Ser Gly Asn Pro Phe Leu Ile Leu Ser Ala Ile Ala Pro Leu Pro
210 215 220
Glu Asn Val Pro Glu Leu Leu Phe Cys Ser Phe Leu Gln Asn Lys Lys
225 230 235 240
Leu Ser Phe Val Glu Lys His Pro Gln Ser Gly His Pro Leu Leu Cys
245 250 255
Asp Ser Glu Phe Ile Leu Thr Gly Glu Ala Val Ala Gly Glu Arg Arg
260 265 270
Pro Glu Gly Pro Phe Gly Asp His Phe Gly Tyr Tyr Ser Leu Thr His
275 280 285
Asp Phe Pro Ile Phe Lys Cys Asn Cys Leu Tyr His Lys Lys Asp Ala
290 295 300
Ile Tyr Pro Ala Thr Val Val Gly Lys Pro Phe Gln Glu Asp Phe Phe
305 310 315 320
Leu Gly Asn Lys Leu Gln Glu Leu Leu Ser Pro Leu Phe Pro Leu Ile
325 330 335
Met Pro Gly Val Gln Asp Leu Lys Ser Tyr Gly Glu Ala Gly Phe His
340 345 350
Ala Leu Ala Ala Ala Ile Val Lys Glu Arg Tyr Trp Lys Glu Ala Leu
355 360 365
Arg Ser Ala Leu Arg Ile Leu Gly Glu Gly Gln Leu Ser Leu Thr Lys
370 375 380
Phe Leu Trp Ile Thr Asp Gln Ser Val Asp Leu Glu Asn Phe Ser Ser
385 390 395 400
Leu Leu Glu Cys Val Leu Glu Arg Met Asn Phe Asp Arg Asp Leu Leu
405 410 415
Ile Leu Ser Glu Thr Ala Asn Asp Thr Leu Asp Tyr Thr Gly Ser Gly

Sequence Listing

```
            420                 425                 430
Phe Asn Lys Gly Ser Lys Gly Ile Phe Leu Gly Val Gly Ala Pro Ile
        435                 440                 445
Arg Ser Leu Pro Arg Arg Tyr Arg Gly Pro Ser Leu Pro Gly Ile Ser
    450                 455                 460
Gln Ile Gly Val Phe Cys Arg Gly Cys Leu Val Leu Glu Thr Ser Leu
465                 470                 475                 480
Gln Gln Leu Asp Ile Pro Ala Leu Leu Lys Asp Pro His Leu Ala Asp
                485                 490                 495
Trp Pro Leu Val Ile Leu Val Glu Asp Leu Ser Ser Ala Leu Ser Ser
            500                 505                 510
Thr Lys Glu Phe Ile Trp Glu Asn Ile Tyr Thr Ile Phe Ser Cys Asn
        515                 520                 525
Arg Phe Thr His Pro Cys Lys Ser Asn His
    530                 535
<210>377
<211>137
<212>PRT
<213>Chlamydia trachomatis
<400>377
Asn Glu Lys Asn Lys Thr Leu Ile Ser Lys Ile Met Phe Ser Leu Val
  1               5                  10                  15
Ser Leu Phe Val Gly Gly Phe Leu Leu Lys Ala Pro Ala Pro Thr Gln
             20                  25                  30
Ser Ala Asp Thr Phe Gln Thr Leu Ile Glu Ser Lys Glu Pro Val Ile
         35                  40                  45
Phe Thr Lys Gln Cys Gly Asp Asn Val Thr Gln Ile Leu Cys Asp Ala
     50                  55                  60
Ile Asp Ser Ala Lys Lys Asp Ile Phe Leu Xaa Ile Tyr Asp Leu Ser
 65                  70                  75                  80
Ala Pro Ala Ile Thr Thr Ser Leu Lys Lys Gln Val Ser Ala Arg Ile
                 85                  90                  95
Pro Val Cys Ile His Tyr Gln Arg Ile Ser Lys Asn Ala Glu Phe Ser
            100                 105                 110
Gln Ser Pro Tyr Leu Thr Pro Trp Glu Asn Ile Leu Pro Cys Thr Glu
        115                 120                 125
Asn Ser Cys Ile Lys Lys Leu Trp Gln
    130                 135
<210>378
<211>197
<212>PRT
<213>Chlamydia trachomatis
<400>378
Lys Ala Gln Lys Phe Val Ile Leu Leu Lys Arg Lys Pro Leu Val Gly
  1               5                  10                  15
Ala Leu Leu Thr Ile Asn Ser Ser Ser Ile Val Ser Phe Asp Gly Gly
             20                  25                  30
Ser Ser Ala Ala Leu Glu Thr Val Leu His His Ile Arg Ser Ala Lys
         35                  40                  45
Glu Ser Ile Gln Val Gly Met Phe Ala Leu Thr Leu Pro Gln Ile Ile
     50                  55                  60
Ala Glu Leu Asn Ala Ala Gln Asn Cys Gly Val Asp Val Val Ile Leu
 65                  70                  75                  80
Val Asp Lys Gly Tyr Lys Ser Phe Thr Val Gln Gln Ile Lys Gln Leu
                 85                  90                  95
Glu His Pro Ser Leu Ser Ile Tyr Glu Lys Val Thr Pro Tyr Gln Leu
            100                 105                 110
His His Lys Phe Gly Ile Phe Asp Lys Lys Thr Leu Ile Thr Gly Ser
        115                 120                 125
Val Asn Trp Ser Glu Asn Gly Phe Leu Ile Asn Thr Glu Asp Met Ile
    130                 135                 140
```

```
Val Ile Glu Asn Leu Thr Glu Lys Gln Gln Ser Lys Ile Gln Ala Ile
145                 150                 155                 160
Trp Glu Gly Leu Val Arg Glu Cys Ala Leu Tyr Tyr Ser Pro Asp Gln
                165                 170                 175
Glu Glu Lys Glu Lys Asp Pro Leu Ile Ile Pro Phe Pro Pro Ser Glu
            180                 185                 190
Lys Lys Gln Ala Ala
        195
<210>379
<211>171
<212>PRT
<213>Chlamydia trachomatis
<400>379
Asn Glu Arg Asn Arg Gly Cys Arg Arg Arg Phe Met Arg Ile Ile Pro
  1               5                  10                  15
Phe Asp Pro Tyr Gly Ser Met Ala Phe Gln Ala Ile Ala Lys Asp Pro
            20                  25                  30
Gln Glu Arg Lys Asn Gly Ser Ile Ser Glu Lys Ile Ser Glu Glu Ile
        35                  40                  45
Ala Arg Asn Glu Ala Leu Arg Met Ala Leu Leu Ala Ile Ala Asp Gln
    50                  55                  60
Glu Asp Lys Glu Lys Lys Gln Lys His Arg Phe Lys Ile Leu Thr Lys
65                  70                  75                  80
Lys Gln Thr Arg Met Leu Leu Gly Gln Leu Arg His Phe Arg Leu Asp
                85                  90                  95
Phe Gln Lys Leu Gln Ala Gly Val Val Ile Glu Trp Ser Trp Asp Asp
            100                 105                 110
Lys Ser Lys Arg Ser Lys Ser Leu Gly Ser Arg Ile Thr Arg Lys Ser
        115                 120                 125
Lys Lys Thr Ile Cys Ile Ser Ala Ala Ala Ala Gln Ala Ile Ala His
    130                 135                 140
Ala Ala Glu Ala Trp Val Ile Ala Arg Asn Glu Gly Ile Leu Glu Met
145                 150                 155                 160
Thr Leu Ser Leu Phe Gln His Lys Asp Asn Glu
                165                 170
<210>380
<211>563
<212>PRT
<213>Chlamydia trachomatis
<400>380
Glu Lys Ile Met Ser Ile Ser Gly Ser Gly Asn Val Ser Pro Ala Thr
  1               5                  10                  15
Pro Asp Phe Asp Pro Ser Ile Leu Met Gly Arg Gln Ala Ala Ser Ala
            20                  25                  30
His Ala Ala Lys Glu Ala Ser Gly Ala Ser Lys Ala Thr Glu Thr Ser
        35                  40                  45
Ala Ala Glu Gln Gln Ala Leu Ile Ser Ser Gly Thr Glu Leu Asp Tyr
    50                  55                  60
Val Thr Asp Leu Gln Gln Ser Glu Gly Lys Tyr Lys Lys Thr Leu Asp
65                  70                  75                  80
Lys Thr Ser Lys Ser Pro Lys Thr Lys Leu Lys Gly Asn Phe Ser Lys
                85                  90                  95
Val Arg Ala Gly Thr Lys Gly Phe Leu Thr Gly Phe Gly Thr Arg Ala
            100                 105                 110
Ser Arg Ile Ser Ala Arg Lys Ala Glu Asn Asn Gly Glu Gly Met Ser
        115                 120                 125
Met Ile Pro Ser Gln Met Glu Tyr Val Lys Lys Lys Gly Asn Arg Val
    130                 135                 140
Ser Pro Glu Met Gln Asn Phe Tyr Leu Gly Ala Ser Gly Leu Trp Ser
145                 150                 155                 160
Pro Thr Ser Asp Val Ser Ser Lys Thr Glu Asn Arg Leu Gly Ala Thr
```

Sequence Listing

```
                 165                 170                 175
Ala Leu Ser Thr Thr Pro Ser Leu Thr Thr Met Gln Asp Pro Val Ser
             180                 185                 190
Ile Glu His Leu Ser Ser Gly Glu Ile Thr Ala Leu Ala Ser Phe Asn
         195                 200                 205
Pro Asn Val Arg Ala Ala Ser Leu Asn Glu Gln Thr Ile Asn Ala Trp
     210                 215                 220
Thr Glu Ala Arg Leu Gly Gly Glu Met Val Ser Thr Leu Leu Asp Pro
225                 230                 235                 240
Asn Ile Glu Thr Ser Ser Leu Leu Arg Arg Ala Pro Thr Val Ser Asn
                 245                 250                 255
Glu Gly Met Val Asp Val Ser Asp Met Gly Asn Gln Thr Thr Ser Leu
             260                 265                 270
Ser Met Glu Gly Leu Val Asn Thr Val Val Asp Asp Pro Ala Ser Ala
         275                 280                 285
Glu Glu Glu Lys Lys Thr Gly Glu Leu Ser Leu Glu Glu Met Ala Ala
     290                 295                 300
Met Ala Lys Met Met Ala Ala Leu Leu Ser Ser Gly Gln Gly Met Ala
305                 310                 315                 320
Val Phe Ile Ala Ser Ser Thr Pro Ser Ser Gly Ser Thr Gln Phe Pro
                 325                 330                 335
Glu Pro Lys Phe Ser Gly Thr Ile Pro His His Phe Ser Lys Lys Glu
             340                 345                 350
Asp Asn Glu Thr Ile Trp Gly Leu Asp Ser Gln Ile Gly Ser Ile Ala
         355                 360                 365
Phe Asp Thr Arg Arg Glu Asn Asn Ala Ser Pro Leu Pro Thr Thr Ser
     370                 375                 380
Leu His Glu Glu Ala Ser Tyr Arg Phe Pro Val Gly Glu Ala Pro Leu
385                 390                 395                 400
Asp Val Asn Glu Ile Pro Phe Ala Val Gln His Ser Thr Val Phe Ser
                 405                 410                 415
Glu Glu Thr Ala Asn Thr Glu Gln Ala Leu Ile Gln Asn Glu Ser Leu
             420                 425                 430
Gly Glu Ile Pro Val Ser Ala Glu Val Val Gly Gln Asp Thr Val Ser
         435                 440                 445
Ser Ala Tyr Gln Phe Pro Ser His Leu Gly Met Ala Val Leu Ala Ser
     450                 455                 460
Val Pro Leu Ser Thr Glu Asp Tyr Lys Thr Ala Val Glu His Arg Lys
465                 470                 475                 480
Gly Pro Gly Gly Pro Pro Asp Pro Leu Ile Tyr Gln Tyr Arg Asn Val
                 485                 490                 495
Ala Val Asp Pro Ala Ile Ile Phe Gln Ser Pro Ser Pro Phe Ser Val
             500                 505                 510
Ser Ser Arg Phe Ser Val Gln Gly Lys Pro Glu Ala Val Ala Val Tyr
         515                 520                 525
Asn Asp Asp Gln Glu Glu Ala Ala Gly Gly Asn Arg Asp Ser Asp Glu
     530                 535                 540
Gly Lys Asp Gln Glu Gln Asp Lys Thr Arg Glu Thr Glu Asp Ala Gly
545                 550                 555                 560
Gly Asp Ser
```

<210>381
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>381

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Asn Lys Leu Phe Trp Phe Leu Leu Met Lys Lys Arg Ser Ser Arg Lys
  1               5                  10                  15
Leu Ala Gln Val Ile Gly Arg Lys Thr Gly Asn Tyr Phe Pro Ala Ser
             20                  25                  30
Ile Glu Gly Glu Thr Lys Lys Glu His Lys Arg Tyr Tyr Ser Thr Ala
```

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          35                  40                  45
Ser Lys Glu Lys Glu Ser Leu Arg Lys Arg Ala Lys Glu Phe Asp Val
     50                  55                  60
Leu Val His Ser Leu Leu Asp Lys His Val Pro Gln Asn Ser Asp Gln
 65                  70                  75                  80
Val Leu Ile Phe Thr Tyr Gln Asn Gly Phe Val Glu Thr Asp Phe His
                 85                  90                  95
Asn Phe Gly Arg Tyr Ser Val Lys Leu
            100                 105
```

<210>382
<211>295
<212>PRT
<213>Chlamydia trachomatis

```
<400>382
Asn His Leu Thr Lys Tyr Leu Cys Met Leu Leu Lys Gly Ala Pro Ala
  1               5                  10                  15
Ala Asp His Ile Leu Ala Thr Ile Lys Glu Asn Ile Arg Ala Cys Ser
            20                  25                  30
Lys Ala Pro Gly Leu Ala Val Val Leu Ile Gly Asn Asn Pro Ala Ser
        35                  40                  45
Glu Ile Tyr Val Asn Met Lys Ile Lys Arg Ala Thr Asp Leu Gly Met
     50                  55                  60
Val Ser Lys Ser Tyr Arg Lys Pro Ser Asp Ala Thr Leu Ser Asp Ile
 65                  70                  75                  80
Leu Ala Leu Ile His Gln Leu Asn Asn Asp Glu Asn Ile His Gly Ile
                 85                  90                  95
Leu Val Gln Leu Pro Leu Pro Lys His Leu Asp Ala Gln Ala Ile Leu
            100                 105                 110
Ser Thr Ile Thr Pro Asp Lys Asp Val Asp Gly Leu His Pro Val Asn
        115                 120                 125
Val Gly Lys Leu Leu Leu Gly Glu Thr Asp Gly Phe Ile Pro Cys Thr
    130                 135                 140
Pro Ala Gly Ile Val Glu Leu Cys Lys Tyr Tyr Glu Ile Pro Leu His
145                 150                 155                 160
Gly Lys His Val Val Ile Leu Gly Arg Ser Asn Ile Val Gly Lys Pro
                165                 170                 175
Leu Ala Ala Leu Leu Met Gln Arg His Ala Asp Thr Asn Ala Ser Val
            180                 185                 190
Thr Leu Leu His Ser Gln Ser Glu His Leu Thr Glu Ile Thr Arg Thr
        195                 200                 205
Ala Asp Ile Leu Ile Ser Ala Ile Gly Val Pro Leu Phe Val Asn Lys
    210                 215                 220
Glu Met Ile Ala Glu Lys Thr Val Ile Met Asp Val Gly Thr Ser Arg
225                 230                 235                 240
Ile Pro Ala Ala Asn Pro Lys Gly Tyr Ile Leu Val Gly Asp Val Asp
                245                 250                 255
Phe Asn Asn Val Val Pro Val Cys Arg Ala Ile Thr Pro Val Pro Gly
            260                 265                 270
Gly Val Gly Pro Met Thr Val Ala Met Leu Met Arg Asn Thr Trp Glu
        275                 280                 285
Ser Phe Leu Arg His Thr Ser
    290                 295
```

<210>383
<211>141
<212>PRT
<213>Chlamydia trachomatis

```
<400>383
Gln Cys Cys Thr Cys Leu Pro Ser His Tyr Ser Cys Pro Trp Trp Ser
  1               5                  10                  15
Arg Pro Asn Asp Arg Arg Tyr Ala Asn Glu Lys Tyr Met Gly Lys Phe
            20                  25                  30
```

```
Phe Ala Ser Tyr Leu Leu Ile Leu Ala Pro Phe Phe Leu Gln Ser Cys
          35                  40                  45
Ser Ala Pro Ser Arg Thr Thr Leu Glu Gly Val Arg Met Thr Ile Pro
      50                  55                  60
Tyr Arg Ile Val Phe Gly Glu Ala Leu Ser Pro Asp Ala Phe Gln Gln
 65                  70                  75                  80
Ala Gln Lys Glu Ile Asp Arg Val Phe Asp His Ile Asp Gln Thr Phe
                 85                  90                  95
Asn Asn Trp Asn Pro Leu Ser Glu Ile Ser Arg Ile Asn Arg Thr Thr
            100                 105                 110
Lys Gln Thr Pro Ile Pro Leu Ser Pro Ala Leu Phe Ala Phe Leu Cys
        115                 120                 125
Glu Ile Asp His Phe His Ala Phe Ser Asp Gly Arg Phe
    130                 135                 140
<210>384
<211>129
<212>PRT
<213>Chlamydia trachomatis
<400>384
Thr Ile Ser Thr Pro Ser Leu Met Ala Val Phe Asp Pro Thr Leu Gly
  1               5                  10                  15
Ala Leu Lys Ser Leu Trp Leu Leu His Leu Lys Ser His Thr Ile Pro
             20                  25                  30
Ser Gln Glu Leu Gln His Leu Tyr Lys His Ser Ser Gly Trp His Leu
          35                  40                  45
Ile Ser Leu Asp Lys Thr Gln Gln Thr Leu Arg Lys Leu Ser Pro Leu
      50                  55                  60
Val Gln Leu Asp Leu Cys Gly Thr Val Lys Gly Phe Ala Val Asp Leu
 65                  70                  75                  80
Leu Gly Thr Ala Cys Ala Gln Phe Cys Gln Asn Tyr Tyr Val Glu Trp
                 85                  90                  95
Gly Gly Glu Ile Lys Thr Arg Gly Lys His Pro Ser Gly Arg Ser Trp
            100                 105                 110
Leu Ser Leu His Gln Leu Pro Gln Arg Phe Phe Ile Cys Met Ile Met
        115                 120                 125
Leu

<210>385
<211>123
<212>PRT
<213>Chlamydia trachomatis
<400>385
Gln Glu Gln Lys Leu Asn Ser Leu Arg Asp His Gly Gly Asn Leu Gly
  1               5                  10                  15
Asp Ala Tyr Val Thr Ile Ser Lys Gly Glu Ala Trp Leu Leu Gln Ser
             20                  25                  30
Ser Ile Ala Pro Tyr Arg Phe Gly Asn Ile Asn Asn His Glu Glu Arg
          35                  40                  45
Arg Lys Arg Lys Leu Leu Leu His Lys Tyr Glu Ile His Lys Leu Asp
      50                  55                  60
Ala Arg Ile Ser Gln Lys Gly Leu Thr Val Val Pro Leu Ser Phe Phe
 65                  70                  75                  80
Phe Ser Lys Gly Phe Val Lys Val Arg Ile Gly Cys Cys Arg Gly Lys
                 85                  90                  95
Lys Ala His Asp Lys Arg Gln Ser Ile Ile Glu Arg Glu Lys Asn Arg
            100                 105                 110
Glu Leu Ala Ala Ala Met Lys Arg Ser Cys Arg
        115                 120
<210>386
<211>428
<212>PRT
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<213>Chlamydia trachomatis
<400>386

```
Leu Ser Leu Ile Ile Ile Leu Ile Ser Lys Tyr His Val Asn Phe Arg
  1               5                  10                  15
Leu His Gly Ala Phe Ser Asn Pro Ser Phe Val Lys Ile Phe Phe Thr
            20                  25                  30
Lys Ala Ser Pro Glu Arg Arg Leu Thr Cys Phe His Val Thr Lys His
        35                  40                  45
Gly Tyr Ser Phe Gln Thr Asp Leu His Asp Tyr Arg Lys Ile Met Lys
    50                  55                  60
Phe Val Ile Ser Arg Asn Glu Leu Gly Asn Leu Ile Lys Lys Val Gln
65                  70                  75                  80
Asn Val Val Pro Gln Ser Thr Pro Ile Pro Val Leu Thr His Val Leu
                85                  90                  95
Ile Glu Ser Cys Asn Asp Glu Leu Val Phe Thr Ala Thr Asp Leu Thr
            100                 105                 110
Val Ser Thr Arg Cys Val Val Lys Ala Lys Val Tyr Glu Ser Gly Ser
        115                 120                 125
Val Thr Ile Pro Ser Arg Arg Phe Phe Gln Leu Ile Arg Glu Leu Thr
    130                 135                 140
Glu Ala Asn Ile Glu Val Ala Ala His Ser Gly Glu Met Ala Thr Ile
145                 150                 155                 160
Thr Ser Gly Ser Ser Cys Phe Arg Leu Leu Ser Met Gly Lys Glu Asp
                165                 170                 175
Phe Pro Met Leu Pro Asp Met Gln Asn Ala Leu Arg Phe Thr Leu Asp
            180                 185                 190
Ser Glu Arg Leu Lys Asp Met Phe Gln Arg Thr Ser Phe Ala Val Ser
        195                 200                 205
Arg Glu Glu Ser Arg Tyr Val Leu Thr Gly Val Leu Leu Ser Ile Ala
    210                 215                 220
Asn Gly Thr Met Thr Val Val Gly Thr Asp Gly Lys Arg Leu Ala Lys
225                 230                 235                 240
Ile Asp Thr Glu Ile Ser Leu Asp Pro Ser Phe Ser Gly Asp Tyr Ile
                245                 250                 255
Ile Pro Ile Lys Ala Val Glu Glu Ile Ile Arg Met Ser Ser Glu Asp
            260                 265                 270
Val Gln Ser Thr Ile Phe Leu Asp Gln Thr Lys Ile Ala Val Glu Cys
        275                 280                 285
Gly Asn Thr Leu Leu Val Thr Lys Leu Leu Ser Gly Glu Phe Pro Asp
    290                 295                 300
Phe Ser Pro Val Ile Ser Thr His Ser Ser Val Gln Leu Asp Leu His
305                 310                 315                 320
Arg Glu Glu Leu Ile Ser Leu Leu Lys Gln Val Ala Leu Phe Thr Asn
                325                 330                 335
Glu Ser Ser His Ser Val Lys Phe Ser Phe Ser Pro Gly Glu Leu Thr
            340                 345                 350
Leu Thr Ala Asn Cys Thr Lys Val Gly Glu Gly Lys Val Ser Met Ala
        355                 360                 365
Val Asn Tyr Thr Gly Glu Thr Leu Glu Ile Ala Phe Asn Pro Phe Phe
    370                 375                 380
Phe Leu Asp Ile Leu Lys His Ser Arg Asp Glu Leu Val Gln Leu Gly
385                 390                 395                 400
Ile Ser Asp Ser Tyr Asn Pro Gly Ile Ile Thr Asp Ser Thr Arg Ser
                405                 410                 415
Leu Phe Val Ile Met Pro Met Arg Leu His Asp Asp
            420                 425
```

<210>387
<211>365
<212>PRT
<213>Chlamydia trachomatis
<400>387

```
Met Arg Val Leu Ser Leu Phe Leu Lys Asp Phe Arg Asn Tyr Thr Asp
  1               5                  10                  15
Leu Arg Leu Glu Leu Gly Pro Glu Met Asn Ser Ile Phe Gly Leu Asn
            20                  25                  30
Ala Gln Gly Lys Thr Asn Leu Leu Glu Ala Leu Tyr Ile Leu Ser Leu
        35                  40                  45
Gly Arg Ser Phe Arg Thr Ser Arg Leu Thr Asp Ala Ile Arg Phe Gly
    50                  55                  60
Ala Ser His Phe Phe Ile Glu Ala Val Phe Ser His Lys Glu Val Phe
65                  70                  75                  80
His Thr Leu Ser Ile Gln Val Asp Lys Lys Gly Lys Lys Ile Leu Phe
                85                  90                  95
Asp Gly Ala Pro Ile Thr Lys Leu Ser Glu Leu Val Gly Leu Phe Pro
            100                 105                 110
Val Ile Leu Phe Ser Ile Lys Asp Ile Ala Ile Ile Glu Gly Ser Pro
        115                 120                 125
Ser Glu Arg Arg Arg Phe Leu Asp Leu Leu Leu Ala Gln Ala Ser Asp
    130                 135                 140
Lys Tyr Thr Glu His Ile Ser Leu Tyr His Lys Ala Leu Asp Gln Arg
145                 150                 155                 160
Asn Ala Ser Ile Lys Ala Gln Asn Gln Lys Ala Ile Ser Ala Trp Asn
                165                 170                 175
Ser Pro Leu Ile Ala Tyr Gly Ser Leu Val Ala Phe Leu Arg Asn Glu
            180                 185                 190
Cys Thr Lys Lys Leu Asn Thr Ile Phe Gln Thr Leu Trp Asp Asn Thr
        195                 200                 205
Leu Lys Glu Thr Leu Ser Leu Arg Tyr Glu Ser Ser Leu Ile Thr Glu
    210                 215                 220
Glu Ser Pro Thr Leu Asn Asp Ile Ala Ser Asn Tyr Tyr Glu Gln Leu
225                 230                 235                 240
Arg Ile Ala Asn Thr Lys Asp Leu Asp Leu Gly Tyr Thr Met Val Gly
                245                 250                 255
Pro His Arg Asp Glu Leu Leu Leu Thr Ile Asn Asp Leu Pro Val Ala
            260                 265                 270
Lys Phe Ser Ser Glu Gly Gln Lys His Ser Leu Leu Ala Val Leu Arg
        275                 280                 285
Phe Ala Glu Cys Val Tyr Leu Gln Glu Glu Phe Cys Ile His Pro Leu
    290                 295                 300
Leu Cys Met Asp Asp Ile His Ala Cys Leu Asp Gln Gln Arg Leu Asp
305                 310                 315                 320
Gln Leu Leu Gln Leu Ser Asn Ser Leu Gly Gln Val Val Thr Thr Ser
                325                 330                 335
Thr Ile Cys Pro Asp His Arg Ser Thr Thr Ser Cys Ile Phe His Val
            340                 345                 350
Thr Gln Ala Gln Val Ser Leu Val Ala Pro Gln Ser Leu
        355                 360                 365
<210>388
<211>333
<212>PRT
<213>Chlamydia trachomatis
<400>388
Asn Asn Ile Asn Arg Cys Cys Glu Met Lys Asn Phe Leu Leu Thr Ile
  1               5                  10                  15
Leu Phe Leu Leu Met Gly Thr Ser Leu Leu Ala Asp Pro Ser Val Ile
            20                  25                  30
Gln Thr Leu Thr Ser Gly Val Ala Gly Val Asn Ser Ile Arg Glu Glu
        35                  40                  45
Lys Glu Ser Val Val Cys Val His Ala Phe Leu Arg Ser Tyr Gly Ser
    50                  55                  60
Leu Lys Pro Ile Gly Arg Val Leu Glu Lys Glu Asn Tyr Asp Val Phe
65                  70                  75                  80
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Ile Trp Asn Tyr Glu Thr Arg Lys Phe Thr Leu Glu Lys His Ala Glu
                 85                  90                  95
His Leu Val Arg Leu Leu Asn Lys Ile Ala Glu Leu Lys Pro Gly Ile
            100                 105                 110
Pro Ile Asn Phe Val Thr His Ser Val Gly Gly Val Ile Val Arg Val
        115                 120                 125
Ala Leu Ala His Pro Asp Cys Pro Glu Glu Ala Lys Lys Gly Lys Ala
    130                 135                 140
Val Leu Met Ala Pro Pro Asn Ala Gly Ser Thr Leu Ala Arg Arg Tyr
145                 150                 155                 160
Ser Arg Ser Ser Leu Val Gln Phe Val Phe Gly Arg Lys Leu Gly Met
                165                 170                 175
Gln Leu Leu Thr Tyr Ser Pro Glu His Met Leu Asn Ile Ala Lys Met
            180                 185                 190
Pro Ser Ser Val Asp Val Leu Val Leu Ser Gly Thr Lys Lys Ser Lys
        195                 200                 205
Phe Leu Leu Phe Gln Leu Glu Glu Asp Asn Asp Gly Lys Val Cys Val
    210                 215                 220
Thr Glu Thr Arg Leu Asp Thr Pro His Gln Asn Tyr Ile Ile Asp Ala
225                 230                 235                 240
Asn His Thr Tyr Ile Ile Thr Asn Lys Thr Ser Leu Phe Leu Met Arg
                245                 250                 255
Glu Phe Leu Arg Asn Gly Ser Arg Ser Ser Ala Leu Thr Gln Val Pro
            260                 265                 270
Glu Glu Ile Glu Ala Ser Ile Gln Gln Ser Pro Lys Ala Lys Val Asn
        275                 280                 285
Lys Glu Lys Ser Lys Asp Ile Tyr Val Ile His Cys Leu Gly Ala His
    290                 295                 300
Pro Tyr Ser Leu Tyr Gly Phe Pro Lys Ser Arg Thr Ser Pro Asn Glu
305                 310                 315                 320
Asn Ser Arg Lys Val Leu Glu Gly Gln Glu Tyr Lys Lys
                325                 330
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<210>389
<211>97
<212>PRT
<213>Chlamydia trachomatis

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Trp Leu Ser Gly Pro Val Gly Ile Val Arg Ile Leu His Thr Gly Trp
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Ser Val Gly Ile Pro Glu Ala Leu Ala Trp Ile Gly Leu Ile Ser Val
             20                  25                  30
Asn Leu Ala Val Leu Asn Leu Leu Pro Ile Pro Val Leu Asp Gly Gly
         35                  40                  45
Tyr Ile Leu Leu Cys Leu Trp Glu Ile Leu Ser Arg Arg Arg Leu Asn
     50                  55                  60
Met Arg Leu Val Glu Lys Ala Leu Val Pro Phe Met Ile Leu Leu Val
 65                  70                  75                  80
Leu Phe Phe Val Phe Leu Thr Leu Gln Asp Leu Ser Arg Val Phe Val
                 85                  90                  95
Gly
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<210>390
<211>423
<212>PRT
<213>Chlamydia trachomatis

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<400>390
Val Ala Leu Glu Ala Asp Phe Cys Phe Ser Arg Arg Pro Leu Ala Asn
  1               5                  10                  15
Leu Leu Val Ala Ile Phe Val Phe Gly Ile Leu Tyr Phe Ser Gly Gly
             20                  25                  30
Arg Thr Lys Ser Phe Ser Glu His Thr Ser Ile Val Gly Trp Val His
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          35                  40                  45
Pro Ser Leu Glu Gln Gln Gly Leu His Ala Gly Asp Gln Ile Phe Phe
     50                  55                  60
Cys Asn Gly Gln Pro Tyr Ser Gly His Lys Met Ala Phe Ser Ser Ser
 65                  70                  75                  80
Leu Leu Glu Arg Lys Leu Ser Leu Gln Gly Gln His Pro Ala Tyr Phe
                 85                  90                  95
Ser Glu Ser Glu Ala Phe Ser Leu Glu Ala Pro Phe Asn Pro Asp Met
            100                 105                 110
Glu Gly Val Pro Cys Leu Gly Ala Ser Tyr Leu Leu Tyr Arg Gly Ser
        115                 120                 125
Asp Pro Leu Pro Glu Lys Ser Pro Leu Val Asp Ala Gly Leu Ser Glu
    130                 135                 140
Gly Asp Arg Leu Val Trp Met Asp Gly Leu Leu Val Phe Ser Gly Ala
145                 150                 155                 160
Gln Val Ser Gln Met Leu Asn Glu Lys Gln Ser Phe Leu Arg Val Glu
                165                 170                 175
Arg Gln Gly Lys Val Val Phe Val Arg Gln Ala Arg Val Leu Ala Gly
            180                 185                 190
Asp Leu Thr Leu Thr Pro Tyr Phe Lys Asn Glu Leu Ile Asp Cys Gln
        195                 200                 205
Tyr Glu Ala Gly Leu Lys Gly Lys Trp Ala Ser Leu Tyr Met Leu Pro
    210                 215                 220
Tyr Ile Ile Asn Gly Asp Gly Phe Val Glu Ser Lys Val Lys Leu Leu
225                 230                 235                 240 Asn Glu Arg Val
Ser Leu Asp Tyr Asn Leu Glu Leu Gly Asp Lys
                245                 250                 255
Ile Val Ala Val Asp Gly Ile Pro Val Met Ser Asn Ala Asp Ile Leu
            260                 265                 270
Arg Leu Val Gln Asp His Arg Val Ser Leu Ile Phe Gln Arg Met Ser
        275                 280                 285
Pro Glu Gln Leu Thr Val Leu Glu Gln Lys Ala Ala Asp Gln Ala Phe
    290                 295                 300
Ile Asn Ser Tyr Asp Met Asp Asp Leu Leu Arg Val Ala Glu Ser Val
305                 310                 315                 320
Gly Glu Glu Arg Glu Val Ser Arg Leu Gly Asp Tyr Arg Leu Val Thr
                325                 330                 335
Arg Val Gln Pro Arg Pro Trp Ala His Ile Tyr Ser Glu Ala Leu Leu
            340                 345                 350
Asp Lys Gln Arg Ala Leu Ala Ser Lys Phe Arg Asp Glu Gln Glu Arg
        355                 360                 365
Arg Tyr Tyr Leu Glu Arg Ile Glu Ala Glu Asn Gln Arg Ile Ser Leu
    370                 375                 380
Gly Ile Pro Leu Arg Ser Ser Arg Ser Val Gln Ser Gly Ser Leu Gly
385                 390                 395                 400
Ile Asp Gly Gly Ile Arg Phe Arg Gln Leu Lys Asp Cys Glu Ser Leu
                405                 410                 415
Gly Asp Gly Ala Gly Glu Pro
            420
<210>391
<211>110
<212>PRT
<213>Chlamydia trachomatis
<400>391
Met Thr Ile Ile Tyr Phe Val Leu Ala Ala Leu Ala Leu Gly Phe Leu
  1               5                  10                  15
Ile Leu Ile His Glu Leu Gly His Leu Leu Ala Ala Lys Ala Val Gly
             20                  25                  30
Met Ser Val Glu Ser Phe Ser Ile Gly Phe Gly Pro Ala Leu Val Arg
         35                  40                  45
Lys Lys Ile Gly Ser Val Glu Tyr Arg Ile Gly Ala Ile Pro Phe Gly
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     50                  55                  60
Gly Tyr Val Arg Ile Lys Gly Met Asp Arg Asn Asp Lys Asp Asn Ser
 65                  70                  75                  80
Gly Asp Lys Glu Lys Thr Val Tyr Asp Ile Pro Glu Gly Phe Phe Ser
                 85                  90                  95
Lys Ser Pro Trp Lys Arg Ile Phe Val Leu Ala Ala Gly Leu
            100                 105                 110
<210>392
<211>380
<212>PRT
<213>Chlamydia trachomatis
<400>392
Leu Leu Lys His Leu Ala Leu Ile Gly Ser Thr Gly Ser Ile Gly Arg
  1                   5                  10                  15
Gln Val Leu Gln Val Val Arg Ser Ile Pro Asp Thr Phe Ile Ile Glu
             20                  25                  30
Thr Leu Ala Ala Tyr Gly Arg Asn Gln Glu Ala Leu Ile Ser Gln Ile
         35                  40                  45
Arg Glu Phe Asn Pro Arg Val Val Ala Val Arg Glu Glu Thr Thr Tyr
     50                  55                  60
Lys Glu Leu Arg Lys Leu Phe Pro His Ile Glu Ile Leu Leu Gly Glu
 65                  70                  75                  80
Glu Gly Leu Val Ser Val Ala Thr Glu Pro Ser Val Thr Ile Thr Ile
                 85                  90                  95
Val Ala Ser Ser Gly Ile Asp Ala Leu Pro Ala Val Ile Ala Ala Ile
            100                 105                 110
Arg Gln Lys Lys Thr Ile Ala Leu Ala Asn Lys Glu Ser Leu Val Ala
        115                 120                 125
Ala Gly Glu Leu Val Thr Thr Leu Ala Arg Glu Asn Gly Val Gln Ile
    130                 135                 140
Leu Pro Ile Asp Ser Glu His Asn Ala Leu Phe Gln Cys Leu Glu Gly
145                 150                 155                 160
Arg Asp Ser Ser Thr Ile Lys Lys Leu Leu Leu Thr Ala Ser Gly Gly
                165                 170                 175
Pro Leu Arg Asn Lys Ser Lys Glu Glu Leu Gln Lys Val Ser Leu Gln
            180                 185                 190
Glu Val Leu Arg His Pro Val Trp Asn Met Gly Pro Lys Ile Thr Val
        195                 200                 205
Asp Ser Ser Thr Leu Val Asn Lys Gly Leu Glu Ile Ile Glu Ala Phe
    210                 215                 220
Trp Leu Phe Gly Leu Glu Ala Val Glu Ile Glu Ala Val Ile His Pro
225                 230                 235                 240
Gln Ser Leu Val His Gly Met Val Glu Phe Cys Asp Gly Thr Ile Leu
                245                 250                 255
Ser Val Met Lys Pro Pro Ser Met Leu Phe Pro Ile Gln His Val Leu
            260                 265                 270
Thr Phe Pro Glu Arg Ser Pro Ala Ile Gly Pro Gly Phe Asp Phe Leu
        275                 280                 285
Ser Asn Arg Thr Leu Glu Phe Phe Pro Ile Asp Glu Asp Arg Phe Pro
    290                 295                 300
Ser Val His Leu Ala Lys Arg Val Leu Leu Glu Lys Gly Ser Met Gly
305                 310                 315                 320
Cys Phe Phe Asn Gly Ala Asn Glu Ala Leu Val His Arg Phe Leu Ala
                325                 330                 335
Gly Glu Ile Ser Trp His Gln Ile Val Pro Lys Leu Gln Ala Leu Val
            340                 345                 350
Asp Gln His Arg Val Gln Ser Cys Leu Ser Leu Glu Glu Ile Leu Ser
        355                 360                 365
Val Asp Ala Glu Ala Arg Ala Arg Ala Gln Glu Cys
    370                 375                 380
<210>393
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<211>167
<212>PRT
<213>Chlamydia trachomatis
<400>393
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Lys Ala Ser Ile Ile Ser Lys Pro Leu Phe Thr Lys Val Glu Glu Ser
20 25 30
Thr Val Ile Leu Gly Pro Ile Phe Gln Thr Gly Cys Arg Lys Thr Ser
35 40 45
Cys Lys Glu Thr Phe Cys Asn Ser Ser Phe Asp Leu Phe Leu Asn Gly
50 55 60
Pro Pro Glu Ala Val Asn Asn Asn Phe Leu Met Val Glu Glu Ser Leu
65 70 75 80
Pro Ser Lys His Trp Lys Ser Ala Leu Cys Ser Leu Ser Met Gly Arg
85 90 95
Ile Cys Thr Pro Phe Ser Leu Ala Lys Val Val Thr Asn Ser Pro Ala
100 105 110
Ala Thr Asn Asp Ser Leu Leu Ala Lys Ala Ile Val Phe Phe Cys Arg
115 120 125
Ile Ala Ala Met Thr Ala Gly Lys Ala Ser Ile Pro Asp Glu Ala Thr
130 135 140
Met Val Ile Val Thr Glu Gly Ser Val Ala Thr Glu Thr Asn Pro Ser
145 150 155 160
Ser Pro Lys Arg Ile Ser Ile
165
<210>394
<211>167
<212>PRT
<213>Chlamydia trachomatis
<400>394
Gly Pro Ser Leu Ser Leu Val Met Arg Xaa Phe Thr Lys Thr Asp Ile
1 5 10 15
Leu Pro Ile Phe Leu Val Leu Leu Ile Asn Leu Gly Ile Ser Tyr Cys
20 25 30
Phe Phe Ser Ser Phe Val Cys Val Ser Phe Asp Thr Ile Phe Ala Phe
35 40 45
Ser Leu Gly Ile Arg Val Arg Leu Val Asp Tyr Leu Val Met Leu Leu
50 55 60
Leu Ser Ala Ser Ile Val Gly Ala Phe Lys Ala Val Gly Val Leu Met
65 70 75 80
Ser Leu Ala Phe Leu Leu Ile Pro Gly Leu Ile Ala Lys Leu Ile Ala
85 90 95
Ser Ser Val Gln Glu Met Met Val Tyr Ser Met Val Phe Gly Gly Leu
100 105 110
Ala Ala Leu Ile Ala Pro Ala Leu Ser Arg Ser Ile Leu Ser Val Tyr
115 120 125
Gly Ile Gly Leu Ser Thr Ser Gly Leu Ala Val Gly Leu Leu Leu Val
130 135 140
Phe Tyr Val Val Met Leu Val Phe Val Cys Ser Lys Arg Ala Ile Met
145 150 155 160
Leu Arg Gln Lys Leu Asp Lys
165
<210>395
<211>162
<212>PRT
<213>Chlamydia trachomatis
<400>395
Met Val Ala Ser Ile Ser Pro Tyr Tyr Gly Val Ser Phe Leu Glu Phe
1 5 10 15
Phe Leu Val Phe Phe Ser Arg Leu Phe Ser Gly Lys Leu Phe Tyr Asp

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            20                  25                  30
His Leu Tyr Ile Asp Asp Ile Gln Val Ile Val Phe Phe Ala Ile Ala
        35                  40                  45
Val Ser Cys Ser Val Val Gly Thr Phe Leu Val Leu Lys Lys Met Ala
    50                  55                  60
Met Tyr Ala Asn Val Val Ser His Thr Ile Leu Phe Gly Leu Val Cys
65                  70                  75                  80
Val Cys Leu Phe Thr His Gln Leu Ile His Leu Ser Met Gln Ala Leu
                85                  90                  95
Thr Ile Ala Ala Val Ser Thr Thr Leu Leu Thr Gly Ala Ser Ile His
            100                 105                 110
Phe Leu Arg Asn Val Phe Lys Val Ala Glu Glu Ala Ser Thr Ala Leu
        115                 120                 125
Val Phe Ser Leu Leu Phe Ser Ala Ser Leu Leu Leu Leu Val Phe Leu
    130                 135                 140
Thr Arg Asn Ala His Val Gly Thr Glu Leu Val Ile Gly Asn Ala Asp
145                 150                 155                 160
Xaa Tyr

<210>396
<211>145
<212>PRT
<213>Chlamydia trachomatis
<400>396
Leu Phe Ser Arg Asp Glu Glu His Leu Leu Lys Ile Phe Trp Tyr Leu
  1               5                  10                  15
Arg Glu Gln Asn Thr Tyr Gln Val Gly Val Arg Asp Phe Val Arg Ser
            20                  25                  30
Arg Lys Tyr Gln Glu Tyr Phe Gly Asp Lys Val Phe Pro Arg Phe Arg
        35                  40                  45
Met Phe Leu Leu Cys Lys Lys Gly Leu Val Ser Cys Ser Glu His Gln
    50                  55                  60
Trp Ser Leu Thr Asp Lys Gly Leu Ala Arg Ala Ala Lys Leu Val Arg
65                  70                  75                  80
Ala His Arg Leu Trp Glu Ser Tyr Leu Val Ser Gln Leu Gly Phe Asn
                85                  90                  95
Lys Asn Glu Val His His Phe Ala Glu Glu Met Glu His Val Leu Thr
            100                 105                 110
Asp Glu Leu Asp Ser Thr Leu Ser Gln Met Leu Gln Asp Pro Asp Tyr
        115                 120                 125
Asp Pro His Gln Arg Glu Ile Pro Lys Arg Thr Arg Lys Ser Asp Gly
    130                 135                 140
Cys
145
<210>397
<211>311
<212>PRT
<213>Chlamydia trachomatis
<400>397
Met Leu Ser Cys Ile Phe Gln Asp Thr Ile Phe Leu Ser Ser Phe Leu
  1               5                  10                  15
Ala Val Ser Leu Ile Cys Met Thr Thr Ala Leu Trp Gly Thr Ile Leu
            20                  25                  30
Leu Val Glu Arg Gln Pro Leu Leu Ser Glu Ser Leu Ser His Ala Cys
        35                  40                  45
Tyr Pro Gly Leu Leu Ile Gly Ala Leu Leu Ser Tyr Lys Val Pro Ala
    50                  55                  60
Phe Ser Asp Ser Leu Trp Val Ile Ile Phe Phe Gly Cys Leu Ala Ser
65                  70                  75                  80
Val Leu Gly Cys Leu Gly Ile Ser Phe Leu Glu Lys Lys Leu Ala Met
                85                  90                  95
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His Lys Asp Ser Ala Leu Cys Leu Val Leu Val Ser Phe Phe Gly Val
            100                 105                 110
Gly Val Ile Leu Val Ser Tyr Val Lys Asp Cys Cys Pro Leu Leu Tyr
        115                 120                 125
Asn Lys Ile Asn Ala Tyr Leu Tyr Gly Gln Ala Ala Thr Leu Gly Tyr
    130                 135                 140
Thr Glu Ala Lys Leu Ala Leu Ile Ile Phe Cys Leu Ser Ala Val Val
145                 150                 155                 160
Leu Trp Trp Trp Tyr Arg Gln Ile Ser Val Ala Ile Phe Asp Arg Glu
                165                 170                 175
Phe Ala Tyr Ser Cys Gly Leu Arg Thr Arg Thr Ala Glu Leu Val Val
            180                 185                 190
Leu Val Phe Ile Ser Leu Val Ile Val Ser Gly Val Arg Ser Val Gly
        195                 200                 205
Ile Leu Leu Ile Ser Ala Met Phe Val Ala Pro Pro Leu Ser Ala Arg
    210                 215                 220
Gln Leu Ser Asp Arg Leu Ser Thr Ile Leu Ile Leu Ser Ser Ile Phe
225                 230                 235                 240
Gly Gly Ile Cys Gly Ala Leu Gly Cys Tyr Phe Ser Val Ala Phe Thr
                245                 250                 255
Cys Gln Thr Val Val Glu Gly Lys Pro Ile Ser Ile Ile Leu Pro Thr
            260                 265                 270
Gly Pro Leu Val Val Phe Phe Ala Gly Val Leu Val Phe Leu Cys Leu
        275                 280                 285
Ile Phe Ser Trp Lys Thr Gly Trp Ile Thr Arg Tyr Phe Arg Arg Lys
    290                 295                 300
Met Val Leu Ile Phe Ser Arg
305                 310
<210>398
<211>261
<212>PRT
<213>Chlamydia trachomatis
<400>398
Leu Phe Leu Asn Arg Asp Asn Ala Ile Ala Trp Ser Val Glu Asp Leu
  1                 5                  10                  15
Cys Val Asn Tyr Asp His Ser Asp Val Leu Cys His Ile Thr Phe Ser
             20                  25                  30
Leu Pro Ala Gly Asp Leu Ala Ala Ile Ile Gly Pro Asn Gly Ala Gly
         35                  40                  45
Lys Ser Thr Leu Leu Lys Ala Ser Leu Gly Leu Ile Arg Ala Ser Ser
     50                  55                  60
Gly Gln Ser Leu Phe Phe Gly Gln Arg Phe Ser Lys Ala His His Arg
 65                  70                  75                  80
Ile Ala Tyr Met Pro Gln Arg Ala Ser Val Asp Trp Asp Phe Pro Met
                 85                  90                  95
Thr Val Leu Asp Leu Val Leu Met Gly Cys Tyr Gly Tyr Lys Gly Ile
            100                 105                 110
Trp Asn Arg Ile Ser Thr Asp Asp Arg Gln Glu Ala Met Arg Ile Leu
        115                 120                 125
Glu Arg Val Gly Leu Glu Ala Phe Ala Asn Arg Gln Ile Gly Lys Leu
    130                 135                 140
Ser Gly Gly Gln Gln Gln Arg Ala Phe Leu Ala Arg Ser Leu Met Gln
145                 150                 155                 160
Lys Ala Asp Leu Tyr Leu Met Asp Glu Leu Phe Ser Ala Ile Asp Met
                165                 170                 175
Ala Ser Tyr Gln Met Val Val Asp Val Leu Gln Glu Leu Lys Ser Glu
            180                 185                 190
Gly Lys Thr Ile Val Val Ile His His Asp Leu Ser Asn Val Arg Lys
        195                 200                 205
Leu Phe Asp His Val Ile Leu Leu Asn Lys His Leu Val Cys Ser Gly
    210                 215                 220
```

```
Ser Val Glu Glu Cys Leu Thr Lys Glu Ala Ile Phe Gln Ala Tyr Gly
225                 230                 235                 240
Cys Glu Leu Glu Leu Leu Asp Tyr Thr Leu Lys Leu Ser Arg Gly Lys
                245                 250                 255
Tyr Gln Gly Ser Cys
            260
<210>399
<211>348
<212>PRT
<213>Chlamydia trachomatis
<400>399
Leu Ser Leu Arg Gly Ser Tyr Thr Phe Ser Lys Tyr Gly Pro Arg Ile
  1               5                  10                  15
Asp Tyr Leu Glu Ala Leu Met Ser Phe Phe His Thr Arg Lys Tyr Lys
             20                  25                  30
Leu Ile Leu Arg Gly Leu Leu Cys Leu Ala Gly Cys Phe Leu Met Asn
         35                  40                  45
Ser Cys Ser Ser Ser Arg Gly Asn Gln Pro Ala Asp Glu Ser Ile Tyr
     50                  55                  60
Val Leu Ser Met Asn Arg Met Ile Cys Asp Cys Val Ser Arg Ile Thr
 65                  70                  75                  80
Gly Asp Arg Val Lys Asn Ile Val Leu Ile Asp Gly Ala Ile Asp Pro
                85                  90                  95
His Ser Tyr Glu Met Val Lys Gly Asp Glu Asp Arg Met Ala Met Ser
            100                 105                 110
Gln Leu Ile Phe Cys Asn Gly Leu Gly Leu Glu His Ser Ala Ser Leu
        115                 120                 125
Arg Lys His Leu Glu Gly Asn Pro Lys Val Phe Asp Phe Gly Gln Arg
    130                 135                 140
Leu Leu Asn Lys Asn Cys Phe Asp Leu Leu Ser Glu Glu Gly Phe Pro
145                 150                 155                 160
Asp Pro His Ile Trp Thr Asp Met Arg Val Trp Gly Ala Ala Val Lys
                165                 170                 175
Glu Val Ala Ala Ala Leu Ile Gln Gln Phe Pro Gln Tyr Glu Glu Asp
            180                 185                 190
Phe Gln Lys Asn Ala Asp Gln Ile Leu Ser Glu Met Glu Glu Leu Asp
        195                 200                 205
Arg Trp Ala Val Arg Ser Leu Ser Thr Ile Pro Glu Lys Asn Arg Tyr
    210                 215                 220
Leu Val Thr Gly His Asn Ala Phe Ser Tyr Phe Thr Arg Arg Tyr Leu
225                 230                 235                 240
Ser Ser Asp Ala Glu Arg Val Ser Gly Glu Trp Arg Ser Arg Cys Ile
                245                 250                 255
Ser Pro Glu Gly Leu Ser Pro Glu Ala Gln Ile Ser Ile Arg Asp Ile
            260                 265                 270
Met Arg Val Val Glu Tyr Ile Ser Ala Asn Asp Val Glu Val Val Phe
        275                 280                 285
Leu Glu Asp Thr Leu Asn Gln Asp Ala Leu Arg Lys Ile Val Ser Cys
    290                 295                 300
Ser Lys Ser Gly Gln Lys Ile Arg Leu Ala Lys Ser Pro Leu Tyr Ser
305                 310                 315                 320
Asp Asn Val Cys Asp Asn Tyr Phe Ser Thr Phe Gln His Asn Val Arg
                325                 330                 335
Thr Ile Thr Glu Glu Leu Gly Gly Thr Val Leu Glu
            340                 345
<210>400
<211>99
<212>PRT
<213>Chlamydia trachomatis
<400>400
Leu Thr Ile Thr Ile Asn Lys Ala Lys Thr Thr Ile Cys Arg Thr Arg
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  1               5                  10                  15
Leu Pro Thr Lys Glu Leu Phe Met Ala Thr Ala Gln Ile Thr Ile Gln
            20                  25                  30
Glu Glu Ile Glu Gln Leu Ile Thr Lys Ala Ile Ser Lys Val Gly Gly
        35                  40                  45
Ser Lys Glu Asn Asp Leu Cys Arg Tyr Leu Pro Gly Pro Thr Gly Gly
    50                  55                  60
Tyr Met His His Phe Thr Leu Lys Lys Met Lys Asn Ser Ala Pro Glu
65                  70                  75                  80
Gln Leu Leu Lys Asn Val Lys Asp Val Cys Asp Arg Phe Tyr His Ser
                85                  90                  95
Gln Ile His
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<210>401
<211>529
<212>PRT
<213>Chlamydia trachomatis
<400>401

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Asn Met Thr Gln Thr Ala Glu Lys Pro Phe Gly Lys Leu Arg Ser Phe
  1               5                  10                  15
Leu Trp Pro Ile His Met His Glu Leu Lys Lys Val Leu Pro Met Phe
            20                  25                  30
Leu Met Phe Phe Cys Ile Ser Phe Asn Tyr Thr Ile Leu Arg Asp Thr
        35                  40                  45
Lys Asp Thr Leu Ile Val Thr Ala Pro Gly Ser Gly Ala Glu Ala Ile
    50                  55                  60
Pro Phe Ile Lys Leu Trp Leu Val Val Pro Ser Ala Val Val Phe Met
65                  70                  75                  80
Leu Ile Tyr Ala Lys Leu Ser Asn Ile Leu Asn Lys Gln Ala Leu Phe
                85                  90                  95
Phe Ala Val Leu Ser Pro Phe Val Val Phe Phe Ala Leu Phe Pro Val
            100                 105                 110
Val Ile Tyr Pro Cys Arg His Ile Leu His Pro Thr Ala Phe Ala Asp
        115                 120                 125
Thr Leu Gln Ser Ile Leu Pro Ser Gly Phe Met Gly Phe Ile Ala Met
    130                 135                 140
Leu Arg Asn Trp Thr Phe Ala Val Phe Tyr Val Leu Ser Glu Leu Trp
145                 150                 155                 160
Gly Ser Val Met Leu Ser Leu Met Phe Trp Gly Phe Ala Asn Glu Ile
                165                 170                 175
Thr Lys Ile Ser Glu Ala Lys Arg Phe Tyr Ala Leu Phe Gly Val Gly
            180                 185                 190
Ala Asn Val Ala Leu Leu Ile Ser Gly Pro Ala Ile Ile Trp Ser Ser
        195                 200                 205
Lys Leu Arg Ala Ser Leu Gly Glu Gly Val Asp Pro Trp Gly Val Ser
    210                 215                 220
Leu Tyr Phe Leu Met Ala Met Phe Leu Cys Ser Cys Ala Ile Ile Ala
225                 230                 235                 240
Ala Cys Tyr Trp Trp Met Asn Arg Tyr Val Leu Thr Asp Pro Arg Phe
                245                 250                 255
Tyr Asn Pro Ala Glu Leu Lys Ala Lys Lys Ser Lys Pro Lys Met Ser
            260                 265                 270
Met Gly Glu Ser Phe Ser Tyr Leu Leu Arg Ser Pro Tyr Met Leu Leu
        275                 280                 285
Leu Ala Leu Leu Val Ile Cys Tyr Gly Ile Cys Ile Asn Leu Val Glu
    290                 295                 300
Val Thr Trp Lys Ser Gln Leu Lys Met Gln Phe Pro Asn Pro Asn Asp
305                 310                 315                 320
Tyr Ser Ala Phe Met Gly Asn Phe Ser Phe Trp Thr Gly Val Val Ser
                325                 330                 335
Val Phe Val Met Leu Phe Ile Gly Gly Asn Val Ile Arg Arg Phe Gly
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            340                 345                 350
Trp Leu Thr Gly Ala Leu Val Thr Pro Ile Met Val Leu Val Thr Gly
        355                 360                 365
Ala Val Phe Phe Ala Leu Val Ile Phe Arg Asp His Ala Thr Gly Leu
    370                 375                 380
Val Ala Ala Leu Gly Thr Thr Pro Leu Met Leu Ala Val Val Val Gly
385                 390                 395                 400
Ala Ile Gln Asn Ile Leu Ser Lys Ser Thr Lys Tyr Ala Leu Phe Asp
                405                 410                 415
Ala Thr Lys Glu Leu Ala Tyr Ile Pro Leu Asp Gln Glu Gln Lys Val
            420                 425                 430
Lys Gly Lys Ala Ala Ile Asp Val Val Ala Ala Arg Phe Gly Lys Ser
        435                 440                 445
Gly Gly Ser Leu Ile Gln Gln Gly Leu Leu Val Val Cys Gly Ser Ile
    450                 455                 460
Gly Ala Met Thr Pro Phe Leu Ala Val Ala Leu Phe Ala Ile Ile Met
465                 470                 475                 480
Val Trp Leu Thr Ser Ala Thr Lys Leu Asn Lys Leu Phe Leu Ala Ala
                485                 490                 495
Ser Ala Ala Lys Glu Gln Glu Leu Xaa Glu Ala Ala Ala Ala Glu Lys
            500                 505                 510
Glu Ala Ser Ser Ala Ala Lys Glu Ser Ala Pro Ala Ile Glu Gly Val
        515                 520                 525
Ser

<210>402
<211>395
<212>PRT
<213>Chlamydia trachomatis
<400>402
Thr Arg Leu Lys Thr Leu Lys Pro Tyr Lys Ile Glu Asn Ile Arg Asn
  1               5                  10                  15
Phe Ser Ile Ile Ala His Ile Asp His Gly Lys Ser Thr Ile Ala Asp
            20                  25                  30
Arg Leu Leu Glu Ser Thr Ser Thr Ile Glu Gln Arg Glu Met Arg Glu
        35                  40                  45
Gln Leu Leu Asp Ser Met Asp Leu Glu Arg Glu Arg Gly Ile Thr Ile
    50                  55                  60
Lys Ala His Pro Val Thr Met Thr Tyr Glu Tyr Glu Gly Glu Thr Tyr
65                  70                  75                  80
Glu Leu Asn Leu Ile Asp Thr Pro Gly His Val Asp Phe Ser Tyr Glu
                85                  90                  95
Val Ser Arg Ser Leu Ala Ala Cys Glu Gly Ala Leu Leu Ile Val Asp
            100                 105                 110
Ala Ala Gln Gly Val Gln Ala Gln Ser Leu Ala Asn Val Tyr Leu Ala
        115                 120                 125
Leu Glu Arg Asp Leu Glu Ile Ile Pro Val Leu Asn Lys Ile Asp Leu
    130                 135                 140
Pro Ala Ala Gln Pro Glu Ala Ile Lys Lys Gln Ile Glu Glu Phe Ile
145                 150                 155                 160
Gly Leu Asp Thr Ser Asn Thr Ile Ala Cys Ser Ala Lys Thr Gly Gln
                165                 170                 175
Gly Ile Pro Glu Ile Leu Glu Ser Ile Ile Arg Leu Val Pro Pro Pro
            180                 185                 190
Lys Pro Pro Gln Glu Thr Glu Leu Lys Ala Leu Ile Phe Asp Ser His
        195                 200                 205
Tyr Asp Pro Tyr Val Gly Ile Met Val Tyr Val Arg Val Ile Ser Gly
    210                 215                 220
Glu Ile Lys Lys Gly Asp Arg Ile Thr Phe Met Ala Thr Lys Gly Ser
225                 230                 235                 240
Ser Phe Glu Val Leu Gly Ile Gly Ala Phe Leu Pro Glu Ala Thr Leu
```

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                245                 250                 255
Met Glu Gly Ser Leu Arg Ala Gly Gln Val Gly Tyr Phe Ile Ala Asn
            260                 265                 270
Leu Lys Lys Val Lys Asp Val Lys Ile Gly Asp Thr Val Thr Thr Val
        275                 280                 285
Lys His Pro Ala Lys Glu Pro Leu Glu Gly Phe Lys Glu Ile Lys Pro
    290                 295                 300
Val Val Phe Ala Gly Ile Tyr Pro Ile Asp Ser Ser Asp Phe Asp Thr
305                 310                 315                 320
Leu Lys Asp Ala Leu Gly Arg Leu Gln Leu Asn Asp Ser Ala Leu Thr
                325                 330                 335
Ile Glu Gln Glu Ser Ser His Ser Leu Gly Phe Gly Phe Arg Cys Gly
            340                 345                 350
Phe Leu Gly Leu Leu His Leu Glu Ile Ile Phe Glu Arg Ile Ser Arg
        355                 360                 365
Glu Phe Asp Leu Asp Ile Ile Ala Thr Ala Pro Ser Val Ile Tyr Lys
    370                 375                 380
Val Val Leu Lys Asn Gly Lys Thr Leu Phe Ile
385                 390                 395
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<213>Chlamydia trachomatis
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Arg Tyr Leu Gln Ser Arg Leu Lys Lys Trp Gln Asn Pro Phe Tyr Leu
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Ile Thr Gln Gln His Ile Leu Thr Gln Leu Leu Leu Asn Thr Trp Lys
             20                  25                  30
Ser Leu Gly Ser Ile Val Asn Ile Ile Thr Pro Gln Glu Tyr Leu Ser
         35                  40                  45
Asn Ile Met Ser Leu Cys Met Asp Lys Arg Gly Ile Cys Leu Lys Thr
     50                  55                  60
Asp Met Leu Asp Gln His Arg Leu Val Leu Ser Tyr Glu Leu Pro Leu
 65                  70                  75                  80
Asn Glu Ile Val Ser Asp Phe Asn Asp Lys Leu Lys Ser Val Thr Lys
                 85                  90                  95
Gly Tyr Gly Ser Phe Asp Tyr Arg Leu Gly Asp Tyr Lys Lys Gly Ala
            100                 105                 110
Ile Ile Lys Leu Glu Ile Leu Ile Asn Asp Glu Ala Val Asp Ala Phe
        115                 120                 125
Ser Cys Leu Val His Arg Asp Lys Ala Glu Ser Lys Gly Arg Ser Ile
    130                 135                 140
Cys Glu Lys Leu Val Asp Val Ile Pro Pro Gln Leu Phe Lys Ile Pro
145                 150                 155                 160
Ile Gln Ala Ala Ile Asn Lys Lys Ile Ile Ala Arg Glu Thr Ile Arg
                165                 170                 175
Ala Leu Ala Lys Asn Val Thr Ala Lys Cys Tyr Gly Gly Asp Ile Thr
            180                 185                 190
Arg Lys Arg Lys Leu Trp Asp Lys Gln Lys Lys Gly Lys Lys Arg Met
        195                 200                 205
Lys Glu Phe Gly Lys Val Ser Ile Pro Asn Thr Ala Phe Val Glu Val
    210                 215                 220
Leu Lys Met Glu
225
<210>404
<211>160
<212>PRT
<213>Chlamydia trachomatis
<400>404
Phe Glu Asp Val Arg Glu Ala Leu Tyr Ala Ala Lys Ile Ile Ser Tyr
  1                 5                  10                  15
```

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Ala Gln Gly Phe Met Leu Leu Lys Gln Val Ser Gln Asp Lys Gly Trp
                20                  25                  30
Asp Leu Asn Leu Gly Glu Leu Ala Leu Ile Trp Arg Gly Gly Cys Ile
            35                  40                  45
Ile Gln Ser Ala Phe Leu Asp Lys Ile His Gln Gly Phe Glu Asn Ser
        50                  55                  60
Pro Glu Ala His Ser Leu Ile Leu Gln Asp Tyr Phe Lys Lys Val Leu
65                  70                  75                  80
Phe Asp Ser Glu Thr Gly Phe Arg Arg Ala Val Leu His Ala Ile Gly
                85                  90                  95
Ser Gly Val Ala Ile Pro Cys Leu Ser Ser Ala Leu Ser Phe Tyr Asp
            100                 105                 110
Gly Tyr Arg Thr Val Asp Ser Pro Leu Phe Leu Val Gln Gly Leu Arg
        115                 120                 125
Asp Tyr Phe Gly Ala His Gly Tyr Glu Arg Arg Asp Cys Pro Arg Gly
    130                 135                 140
Glu Phe Tyr His Thr Asp Trp Leu Glu Thr Lys Lys Thr Phe Arg Ala
145                 150                 155                 160
<210>405
<211>322
<212>PRT
<213>Chlamydia trachomatis
<400>405
Glu Gly Ser Val Ala Pro Asn Thr Asp Ile Gly Leu Ile Gly Leu Ala
  1                 5                  10                  15
Val Met Gly Lys Asn Leu Val Leu Asn Met Val Asp His Gly Phe Ser
            20                  25                  30
Val Ser Val Tyr Asn Arg Ser Pro Ala Lys Thr Glu Glu Phe Leu Lys
        35                  40                  45
Asp His Gly Glu Ser Gly Ala Leu Gln Gly Phe Thr Thr Ile Gln Glu
    50                  55                  60
Phe Val Gln Ser Leu Lys Arg Pro Arg Lys Ile Met Ile Met Ile Lys
65                  70                  75                  80
Ala Gly Ala Pro Val Asp Glu Met Ile Ala Ser Leu Leu Pro Phe Leu
                85                  90                  95
Glu Glu Gly Asp Ile Leu Ile Asp Gly Gly Asn Ser Tyr Tyr Leu Asp
            100                 105                 110
Ser Glu Arg Arg Tyr Val Asp Leu Lys Lys Glu Gly Ile Leu Phe Val
        115                 120                 125
Gly Met Gly Val Ser Gly Gly Glu Glu Gly Ala Arg Lys Gly Pro Ser
    130                 135                 140
Ile Met Pro Gly Gly Asn Ile Asp Ala Trp Pro Ala Ile Ala Pro Ile
145                 150                 155                 160
Phe Gln Ser Ile Ala Ala Gln Val Gly Gly Arg Pro Cys Cys Ser Trp
                165                 170                 175
Ile Gly Thr Gly Gly Ala Gly His Phe Val Lys Ala Val His Asn Gly
            180                 185                 190
Ile Glu Tyr Gly Asp Ile Gln Leu Ile Cys Glu Thr Tyr Glu Ile Leu          195
200                 205
Lys Thr Arg Leu Asn Leu Ser Leu Glu Gln Ile Gly Asn Ile Phe Phe
    210                 215                 220
Glu Trp Asn Gln Thr Asp Leu Asn Ser Tyr Leu Leu Gly Ala Ala Ala
225                 230                 235                 240
Ala Val Leu Ile Ala Lys Asp Glu Asn Gly Asn Ala Ile Ala Ser Thr
                245                 250                 255
Ile Leu Asp Val Ala Gly Gln Lys Gly Thr Gly Arg Trp Val Ala Glu
            260                 265                 270
Asp Ala Ile Lys Ala Gly Val Pro Met Ser Leu Ile Ile Glu Ser Val
        275                 280                 285
Leu Ala Arg Tyr Leu Ser Thr Trp Lys Glu Val Arg Thr Lys Ala Ala
    290                 295                 300
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Gln Glu Phe Pro Gly Phe Leu Phe Xaa Val Asn Leu His Lys Lys Leu
305                 310                 315                 320
Leu Pro

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<213>Chlamydia trachomatis
<400>406
Ile Phe Met Gln Gln Leu Ile Asp Asn Leu Lys Lys Arg Gly Ile Leu
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Asp Asn Ser Ser Ala Gly Leu Glu Ser Leu Thr Val Pro Val Ser Ala
             20                  25                  30
Tyr Leu Gly Phe Asp Pro Thr Ala Pro Ser Leu His Ile Gly His Trp
         35                  40                  45
Ile Gly Ile Cys Phe Leu Arg Arg Leu Ala Ala Tyr Gly Ile Thr Pro
     50                  55                  60
Val Ala Leu Val Gly Gly Ala Thr Gly Met Ile Gly Asp Pro Ser Gly
 65                  70                  75                  80
Lys Ser Val Glu Arg Ser Leu Leu Asp Gln Ala Gln Val Leu Asp Asn
                 85                  90                  95
Ser Lys Lys Ile Ala Ala Ala Leu Ala Ser Tyr Leu Pro Gly Ile Arg
            100                 105                 110
Ile Val Asn Asn Ala Asp Trp Leu Gly Ser Leu Ser Met Val Asp Phe
        115                 120                 125
Leu Arg Asp Val Gly Lys His Phe Arg Leu Gly Ser Met Leu Ala Lys
    130                 135                 140
Asp Val Val Lys Gln Arg Val Tyr Ser Glu Glu Gly Ile Ser Tyr Thr
145                 150                 155                 160
Glu Phe Ser Tyr Leu Leu Leu Gln Ser Tyr Asp Phe Ala His Leu Phe
                165                 170                 175
Lys Glu His Asn Val Val Leu Gln Cys Gly Gly Ser Asp Gln Trp Gly
            180                 185                 190
Asn Ile Thr Ser Gly Ile Asp Tyr Ile Arg Arg Arg Gly Leu Gly Gln
        195                 200                 205
Ala Tyr Gly Leu Thr Tyr Pro Leu Leu Thr Asp Ser Lys Gly Lys Lys
    210                 215                 220
Ile Gly Lys Thr Glu Ser Gly Thr Ile Trp Leu Asp Pro Ala Leu Thr
225                 230                 235                 240
Pro Pro Tyr Glu Leu Phe Gln Tyr Phe Leu Arg Leu Pro Asp Gln Glu
                245                 250                 255
Ile Ser Lys Val Met Arg Thr Leu Thr Leu Leu Asp Asn Glu Glu Val
            260                 265                 270
Phe Ala Leu Asp Glu Arg Leu Thr Ser Asp Pro Gln Ala Val Lys Xaa
        275                 280                 285
Tyr Ile Ala Glu Val Ile Val Lys Asp Val His Gly Ser Glu Gly Leu
    290                 295                 300
Ala Gln Ala Gln Ala Ala Thr Glu Ser Phe Phe Ala Ser Lys Gly Lys
305                 310                 315                 320
Ser Ile Thr Glu Ala Glu Leu Val Ala Leu Val Glu Ser Gly Val Gly
                325                 330                 335
Val Lys Val Ala Arg Ala Asp Leu Ile Gly Lys Arg Trp Leu Asp Ile
            340                 345                 350
Val Val Glu Leu Gly Phe Cys Ser Ser Arg Gly Gln Ala Arg Arg Leu
        355                 360                 365
Ile Gln Gln Arg Gly Leu Tyr Ile Asn Gln Glu Pro Leu Ala Asp Glu
    370                 375                 380
Gln Ser Ile Leu Asp Gly Thr Gln Leu Cys Phe Asp Arg Tyr Val Leu
385                 390                 395                 400
Leu Ser Gln Gly Lys Arg Lys Lys Gln Val Ile Asp Leu Lys Leu Gly
                405                 410                 415
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Gly Val Cys Gly Ser Lys Tyr Arg Tyr Trp Val Asp Trp Phe Gly Arg
            420                 425                 430
Asp Gly Gln Lys Pro Cys Ile Glu His Gly Gly Ser Trp Phe Phe Cys
        435                 440                 445
Phe Cys Leu
    450
<210>407
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<212>PRT
<213>Chlamydia trachomatis
<400>407
Phe Val Lys Glu Ile Phe Phe Val Lys Thr His Asp Leu Ala Asp Thr
  1               5                  10                  15
Trp Gln Leu Tyr Trp Ser Thr Lys Glu Ile His His Arg Asp Val Leu
             20                  25                  30
Ile Glu Ser Tyr Leu Pro Leu Val Lys Asn Val Ala His Arg Leu Ala
         35                  40                  45
Ser Gly Met Pro Ser His Val Lys Met Glu Asp Leu Tyr Ala Leu Gly
     50                  55                  60
Val Glu Gly Leu Ile Arg Ala Val Glu Arg Phe Asp Pro Glu Lys Ser
 65                  70                  75                  80
Lys Arg Phe Glu Ser Tyr Ala Leu Phe Ile Ile Lys Ala Ala Ile Ile
                 85                  90                  95
Asp Gly Leu Arg Lys Gln Asp Trp Val Pro Arg Ser Val Tyr Gln Arg
            100                 105                 110
Ala Asn Arg Leu Ala Asp Ala Met Asp Ser Leu Arg Gln Thr Leu Gly
        115                 120                 125
Lys Glu Pro Thr Asp Gly Glu Leu Cys Glu Tyr Leu Asn Ile Ser Gln
    130                 135                 140
Gln Glu Leu Ser His Trp Phe Ser Ser Ser Arg Pro Ala Leu Val Leu
145                 150                 155                 160
Ser Leu Asn Asp Asp Phe Ser Cys Gln Asp Asp Asp Glu Gly Leu Ala
                165                 170                 175
Leu Glu Glu Arg Ile Ala Asp Glu Arg Ala Glu Thr Gly Tyr Asp Val
            180                 185                 190
Ile Arg Lys Lys Glu Ala Ile Ser Ile Leu Thr Glu Ala Leu Leu Ala
        195                 200                 205
Leu Asp Glu Lys Glu Arg Gln Val Met Ala Leu Tyr Tyr Tyr Asp Asp
    210                 215                 220
Leu Val Leu Lys Glu Ile Gly Lys Ile Leu Gly Val Ser Glu Ser Arg
225                 230                 235                 240
Val Ser Gln Ile His Ser Lys Ala Leu Leu Lys Leu Arg Gly Thr Leu
                245                 250                 255
Ser Ser Leu Leu
            260
<210>408
<211>130
<212>PRT
<213>Chlamydia trachomatis
<400>408
Met Tyr Met Ala Leu Lys Ser Lys Asn Ser Gln Glu Leu Val Glu Cys
  1               5                  10                  15
Val Arg Lys Tyr Leu Gly Lys Gln Ile Gly Leu Ser Leu Trp Asn Arg
             20                  25                  30
Gln Asp Val Leu Glu Val Ile Thr Ile Asp Ser Leu Val Glu Gln Phe
         35                  40                  45
Val Arg Asp Ser Gln Glu Lys Val Val Leu Asp Leu Asn Glu Lys Val
     50                  55                  60
Val Ala Gln Val Lys His Leu Leu Arg Val Gly Glu Gly Asn Phe Arg
 65                  70                  75                  80
Ala Ile Val Thr Gly Ser Glu Thr Arg Lys Glu Leu Lys Arg Ile Val
```

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                85                  90                  95
Asp Pro Tyr Phe Pro Asp Leu Leu Val Leu Ala His Ser Glu Leu Pro
            100                 105                 110
Glu Glu Ile Pro Ile Thr Leu Leu Gly Ala Val Ser Asp Glu Val Leu
        115                 120                 125
Leu Ser
    130
<210>409
<211>397
<212>PRT
<213>Chlamydia trachomatis
<400>409
Gly Ile Ser Phe Pro Leu Gly Ala Ser Arg Leu Ala Leu Thr Val Cys
  1               5                  10                  15
Leu Leu Leu Phe Leu Val Asn Phe Leu Val Ile Thr Lys Gly Ala Glu
             20                  25                  30
Arg Ile Ala Glu Val Arg Ala Arg Phe Ser Leu Glu Ala Leu Pro Gly
         35                  40                  45
Lys Gln Met Ser Leu Asp Ala Asp Ile Ala Ala Gly Arg Ile Gly Tyr
     50                  55                  60
Ser Arg Ala Ser Val Lys Lys Ser Ser Leu Leu Glu Glu Ser Asp Tyr
 65                  70                  75                  80
Phe Ser Ala Met Glu Gly Val Phe Arg Phe Val Lys Gly Asp Ala Ile
                85                  90                  95
Met Ser Trp Val Leu Leu Gly Val Asn Ile Leu Ala Ala Leu Phe Leu
            100                 105                 110
Gly Arg Ala Thr His Val Gly Asp Leu Trp Leu Thr Val Leu Gly Asp
        115                 120                 125
Ala Leu Val Ser Gln Ile Pro Ala Leu Leu Thr Ser Cys Ala Ala Ala
    130                 135                 140
Thr Leu Ile Ala Lys Val Gly Glu Lys Glu Ser Leu Ala Gln His Leu
145                 150                 155                 160
Leu Asp Tyr Tyr Glu Gln Ser Arg Gln Ser Phe Leu Phe Ile Ala Leu
                165                 170                 175
Ile Leu Cys Gly Met Ala Cys Ile Pro Gly Ala Pro Lys Ala Leu Ile
            180                 185                 190
Leu Gly Phe Ser Val Leu Leu Phe Leu Gly Tyr Lys Asn Pro Ser Ser
        195                 200                 205
Gly Glu Thr Leu Leu Phe Gln Lys Glu Arg Val Glu Phe Val Leu Pro
    210                 215                 220
Asp Glu Gly Val Gly Asn Pro Ala Asn Leu Tyr Lys Asp Ala Arg Asn
225                 230                 235                 240
Gln Ile Tyr Gln Glu Leu Gly Val Val Phe Pro Glu Ala Ile Val Val
                245                 250                 255
Arg Tyr Val Thr Gly Ser Ser Pro Arg Leu Ile Phe Ser Gly Gln Glu
            260                 265                 270
Val Ala Leu Arg Glu Leu Ser Cys Pro Ala Ile Leu Glu Ser Ile Arg
        275                 280                 285
Gln Leu Ala Pro Glu Thr Ile Ser Glu Arg Phe Val Ala His Leu Val
    290                 295                 300
Asp Glu Phe Arg Glu His Ala Phe Leu Ser Ile Glu Glu Ile Leu Pro
305                 310                 315                 320
Leu Lys Ile Ser Glu Asn Ser Leu Ile Phe Leu Leu Arg Ala Leu Val
                325                 330                 335
Arg Glu Arg Val Ser Leu His Leu Phe Pro Lys Ile Leu Glu Ala Ile
            340                 345                 350
Asp Val Tyr Gly Ser Gln Ile Lys Glu Phe Ser Gly Ile Gly Arg Val
        355                 360                 365
Cys Thr Lys Ile Ser Trp Glu Ala Asn Trp Phe Ile Leu Met Glu Ser
    370                 375                 380
Pro Arg Cys Leu Arg Gly Asn Tyr Asp Arg Leu Ser Gly
```

385 390 395

<210>410
<211>82
<212>PRT
<213>Chlamydia trachomatis
<400>410

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Met Ala Lys Leu Ile Ile Ser Ala Asp Asp Glu Asn Gln Glu Phe His
  1               5                  10                  15
Leu Glu Asp Gly Ser Ser Ile Ala Glu Val Cys Glu His Ser Gly Val
             20                  25                  30
Pro Phe Ala Cys Met Glu Gly Val Cys Gly Thr Cys Val Ile Glu Val
         35                  40                  45
Leu Glu Gly Ala Asp Asn Leu Ser Asp Phe Ser Glu Ala Glu Tyr Asp
     50                  55                  60
Phe Leu Gly Asp Pro Glu Asp Ser Asn Glu Arg Leu Ala Cys Gln Met
 65                  70                  75                  80
Leu His
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<210>411
<211>365
<212>PRT
<213>Chlamydia trachomatis
<400>411

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Glu Phe Met Phe Thr Ser Leu Ser Ala Ile Gln Asn Ala Ile Arg Pro
  1               5                  10                  15
Ser Cys Gln Leu Pro Val Leu Thr Pro Arg Arg Ala Leu Ile Thr Ser
             20                  25                  30
Leu Ala Ser Gly Ile Ile Leu Gly Leu Ala Gly Cys Val Val Gly Val
         35                  40                  45
Leu Ala Ser Leu Pro Ala Leu Ile Ala Val Ser Ala Val Ile Leu Gly
     50                  55                  60
Val Ser Leu Phe Ala Ser Gly Leu Phe Leu Cys Arg Tyr Val Cys Pro
 65                  70                  75                  80
Pro Lys Ile Val Ser Arg Arg Pro Ser Thr Glu Leu Pro Ala Glu Pro
                 85                  90                  95
Thr Pro Glu Leu Pro Glu Ile Lys Arg Pro Lys Pro Ile Ala Pro Pro
            100                 105                 110
Pro Pro Asp Phe Ile Pro Pro Lys Pro Leu Arg Arg Thr Ile Gly Glu
        115                 120                 125
Met Leu Phe Gly Trp Asn Cys Ile Glu Ser Ile Arg Gln Met Pro Phe
    130                 135                 140
Phe Leu Ala Asn Asp Lys Thr Pro Leu Phe Phe Arg Asn Pro Ser Ala
145                 150                 155                 160
Arg Phe Arg Ala Trp Asn Ile Pro Phe Thr His Thr Ile Phe Val Ser
                165                 170                 175
Thr Ser Gly Gln Phe Ser Ser Leu Arg Met Gln Ser Asn Leu Pro Ala
            180                 185                 190
Ala Ile Ala Asn Ala Thr Gln Ser Ala Ala Phe Ala Lys Arg Gly Gln
        195                 200                 205
Gly Gly Leu Gly Val Asn Asp Ala Phe Pro Ala Val Leu Thr Asp Lys
    210                 215                 220
Cys Trp Glu Glu Ser Lys Pro Glu Ser Gly Ile Leu Leu Pro Gly Glu
225                 230                 235                 240
Cys Ser Ser Ala Thr Trp Glu Asp Lys Asn His Leu Val Pro Cys Trp
                245                 250                 255
Asp Glu Glu Thr Lys Thr Tyr Asn Lys Pro Leu Leu Phe Ile Gln Met
            260                 265                 270
Leu Ala Pro Lys Ala Ser Met Ser Lys Ser Cys Tyr Glu Ile Thr Leu
        275                 280                 285
Arg Ala Tyr Thr Ala Cys Phe Glu Glu Ala Ile Arg Cys Gly Cys Arg
    290                 295                 300
```

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Met Ile Gln Ile Pro Leu Ile Ala Ser Phe Gly Asp Phe Val Pro Arg
305 310 315 320
Ala Leu Ser Lys Arg Pro Lys Trp Ile Glu Ser Ala Lys Leu Ala Leu
325 330 335
Leu His Ala Val Glu Lys Thr Ala Lys Lys His Ala Ser Lys Asp Leu
340 345 350
Val Ile Val Leu Thr Asn Ile Pro Gln Pro Val Asn Leu
355 360 365

<210>412
<211>611
<212>PRT
<213>Chlamydia trachomatis
<400>412

Gln Lys Leu Phe Val Gly His Leu Val Met Ala Thr Pro Cys Ile Gln
1 5 10 15
Asn Ala Phe Arg Arg Lys Thr Leu Pro Val Arg Ile Gly Asp Leu Phe
20 25 30
Val Gly Ser Glu His Ser Ile Lys Ile Gln Ser Met Thr Thr Thr Ala
35 40 45
Thr Thr Asp Val Asp Gly Thr Val Arg Gln Ile Cys Ala Leu Gln Glu
50 55 60
Leu Gly Cys Asp Ile Val Arg Val Thr Val Gln Gly Leu Arg Glu Val
65 70 75 80
His Ala Cys Glu His Ile Lys Asp Arg Leu Ile Gln Gln Asn Ile Ser
85 90 95
Ile Pro Leu Val Ala Asp Ile His Phe Phe Pro Gln Ala Ala Ile His
100 105 110
Val Val Asp Cys Val Asp Lys Val Arg Ile Asn Pro Gly Asn Tyr Val
115 120 125
Asp Lys Arg Asn Met Phe Thr Gly Lys Ile Tyr Ser Asp Glu Gln Tyr
130 135 140
Ala His Ser Leu Glu His Leu Met Asn Lys Phe Ser Pro Leu Val Glu
145 150 155 160
Lys Cys Lys Arg Leu Gly Lys Ala Met Arg Ile Gly Val Asn His Gly
165 170 175
Ser Leu Ser Glu Arg Val Thr Gln Arg Tyr Gly Asn Thr Ile Glu Gly
180 185 190
Met Val Tyr Ser Ala Leu Glu Tyr Ala Glu Val Cys Val Ala Met Asp
195 200 205
Tyr His Asp Val Ile Phe Ser Met Lys Ser Ser Asn Pro Lys Val Met
210 215 220
Val Ala Ala Tyr Arg Ser Leu Ala Tyr Glu Leu Asp Gln Arg Glu Trp
225 230 235 240
Ser Tyr Pro Leu His Leu Gly Val Thr Glu Ala Gly Ser Gly Thr Ala
245 250 255
Gly Ile Val Lys Ser Ala Val Gly Ile Gly Thr Leu Leu Ser Glu Gly
260 265 270
Leu Gly Asp Thr Ile Arg Cys Ser Leu Thr Gly Ser Pro Ile Asn Glu
275 280 285
Ile Pro Ile Cys Ile Asp Leu Leu Lys Gln Thr Thr Glu Leu Ser Glu
290 295 300
Arg Trp Gly Glu Ala Asp Asn Pro Phe Ala Ile His Ser Ser Lys Gln
305 310 315 320
Leu Gly Thr Arg Asn Thr Leu Asn Thr Pro Pro Trp Asp Asn Val Tyr
325 330 335
Gly Leu Leu Ile Asn Leu Thr Asp Val Gln Leu Leu Thr Ala Glu Pro
340 345 350
Ile Glu Leu Leu Gln Cys Leu Gly Ile Asp Thr Thr Thr Gly Lys Ile
355 360 365
Asp Pro Thr Thr Pro Glu Gly Val Val Val Pro Lys Ala Met Arg Ser
370 375 380

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```
Ser Pro Ile Val Ser Glu Ile Glu Lys His Leu Leu Val Phe Asn Lys
385                 390                 395                 400
Glu Asp Ala Pro Ile Leu Asn Pro Met Asn Glu Glu Glu Trp Leu Ser
                405                 410                 415
Glu Glu Thr Leu Ser Ala Pro Phe Val Tyr Phe Glu Val Thr Asp Ile
            420                 425                 430
His Thr Ala Arg Arg Phe Phe Ser Leu Arg Gln His Ser Thr Gln Pro
        435                 440                 445
Val Cys Leu Ser Phe Ser Leu Asp Pro His Leu Ser Lys Asn Glu Ala
    450                 455                 460
Ile Ile Asp Leu Ser Ala Arg Leu Gly Ala Leu Leu Leu Asp Gly Leu
465                 470                 475                 480
Gly Ser Cys Val Leu Leu Asp Phe Val Asp Ile Lys Leu Ser Arg Thr
                485                 490                 495
Leu Gly Phe Leu Ile Leu Gln Ser Ala Asn Ile Arg Ser Val Thr Val
            500                 505                 510
Glu Tyr Val Ser Cys Pro Gly Cys Gly Arg Thr Leu Phe Asp Leu Leu
        515                 520                 525
Ala Val Ser Gln Arg Ile Arg Glu Arg Thr Lys His Leu Pro Gly Gly
    530                 535                 540
Leu Lys Ile Ala Val Met Gly Cys Ile Val Asn Gly Pro Gly Glu Met
545                 550                 555                 560
Ala Asp Ala Asp Phe Gly Tyr Val Gly Ser Lys Pro Gly Met Ile Asp
                565                 570                 575
Leu Tyr Val Lys His Lys Cys Val Lys Ser Cys Ile Pro Ile Glu Asn
            580                 585                 590
Ala Glu Glu Glu Leu Val Gln Leu Leu Lys Glu His Gly Val Trp Lys
        595                 600                 605
Glu Pro Glu
    610
<210>413
<211>171
<212>PRT
<213>Chlamydia trachomatis
<400>413
Ala Met Arg Val Leu Leu Ile Arg Val Asn Phe Pro Ser Lys His Ile
  1               5                  10                  15
Thr Leu Ile Tyr Ile Val Ser Trp Ile Asp Thr His Phe Ile Tyr Thr
            20                  25                  30
Ile His Asn Met Tyr Gly Cys Leu Arg Lys Glu Met Asp Ile Cys Tyr
        35                  40                  45
Lys Arg Asp Gly Asn Val Leu Leu Asn Gln Ala Val Phe Asn Val Leu
    50                  55                  60
Ala Cys Met Asn Leu Ser Gln Thr Leu Tyr Arg Asn Thr Asn Asp Val
65                  70                  75                  80
Ala Thr Gln Leu Leu Gln Ser Thr Asn Leu Ser Asn Arg Ser Ile His
                85                  90                  95
Ile Cys Gly Gly Cys Ser Arg His Arg Leu Asp Phe Asp Gly Val Leu
            100                 105                 110
Thr Thr Asn Lys Lys Ile Ser Asp Ser Tyr Trp Glu Gly Phe Ala Ser
        115                 120                 125
Lys Arg Ile Leu Tyr Thr Gly Cys Cys His Asp Glu Val Ser Tyr Lys
    130                 135                 140
Gln Phe Leu Lys Leu Ala Gly Thr Val Pro Ala Glu Ser Leu Ser Pro
145                 150                 155                 160
Glu Gly Phe Gly Gly Leu Arg Lys Tyr Lys Leu
                165                 170
<210>414
<211>252
<212>PRT
<213>Chlamydia trachomatis
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Sequence Listing

<400>414
Met Glu Arg Ala Arg Ile Gly Ser Leu Met Thr Leu Pro Ser Glu Ala
1 5 10 15
Leu Arg Lys Gln Thr Phe Pro Glu Leu Glu Tyr Leu Pro Ile Arg His
20 25 30
Gly Ile Phe Pro Lys Gln Asp Asp Lys Glu Glu Ala Ser Gln Val Ser
35 40 45
Asp Glu Val Ile Ser Ser Ser Leu Gly Gly Asn Asp Phe Cys Asn Ala
50 55 60
Arg Gln Val His Gly Thr Ser Val Arg Tyr Val Thr Pro Lys Thr Pro
65 70 75 80
Lys Arg Ala Pro Ala Asp Gly Leu Phe Thr Thr Thr Pro Leu Leu Ser
85 90 95
Leu His Ile Tyr His Ala Asp Cys Gln Ala Ala Ile Phe Tyr Asp Pro
100 105 110
Glu Asn His Val Ile Ala Asn Val His Ala Gly Trp Arg Gly Leu Val
115 120 125
Gly Asn Ile Tyr Ala Val Thr Val Arg Leu Leu Lys Lys Thr Phe Asn
130 135 140
Thr Arg Pro Gln Asp Leu Ile Val Ala Ile Ser Pro Ser Leu Gly Pro
145 150 155 160
Asp Met Ala Val Tyr Pro Asp Tyr Lys Arg Leu Phe Pro Ser Ser Phe
165 170 175
Phe Pro Leu Met Pro Lys Glu Asn His Leu Asp Phe Arg Ala Val Ala
180 185 190
Arg Lys Gln Leu Leu Ser Glu Gly Leu Ser Ser Asn His Ile Phe Ile
195 200 205
Ser Glu Arg Cys Thr Cys Ser Glu Ser Asn Thr Phe Phe Ser Phe Arg
210 215 220
Ser Trp Lys Ser Arg His Gln Gln Asp Pro Ser Ala Ile Arg Ser Arg
225 230 235 240
Lys Asn Asn Val Thr Ala Val Leu Leu Leu Pro Arg
245 250

<210>415
<211>365
<212>PRT
<213>Chlamydia trachomatis
<400>415
Met Ser Ile Glu Val Arg Ile Pro Asn Ile Ala Glu Ser Ile Ser Glu
1 5 10 15
Val Thr Ile Ser Ala Leu Leu Ile Pro Ser Gly Asp Leu Val Gln Glu
20 25 30
Asn Gln Gly Ile Leu Glu Ile Glu Ser Asp Lys Val Asn Gln Leu Ile
35 40 45
Tyr Ala Pro Cys Ser Gly Arg Val Glu Trp Ser Val Ser Val Gly Asp
50 55 60
Thr Val Ala Val Gly Ser Val Val Gly Ile Ile Ser Glu Ala Glu Lys
65 70 75 80
Ser Gln Asp Thr Ala Pro Ile His Glu Gln Met Pro Phe Ser Leu Val
85 90 95
Glu Gln Glu Ser Asp Ala Gln Ile Ile Ala Phe Pro Ser Ser Val Arg
100 105 110
Gln Asp Pro Pro Ala Glu Gly Lys Thr Phe Val Pro Leu Lys Glu Ile
115 120 125
Gln Pro Ala Ser Ser Asp His Arg Glu Ser Arg Glu Ser Met Ser Ala
130 135 140
Ile Arg Lys Thr Ile Ser Arg Arg Leu Val Gln Ser Leu His Asp Ser
145 150 155 160
Ala Met Leu Thr Thr Phe Asn Glu Ile His Met Gly Pro Leu Ile Ala
165 170 175
Leu Arg Lys Glu Arg Gln Glu Asp Phe Val Ala Lys Tyr Gly Val Lys

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            180                 185                 190
Leu Gly Phe Met Ser Phe Phe Val Arg Ala Val Val Asp Ser Leu Lys
        195                 200                 205
Lys Tyr Pro Arg Val Asn Ala Tyr Ile Glu Asp Asn Glu Ile Val Tyr
    210                 215                 220
Arg His Tyr Tyr Asp Ile Ser Ile Ala Ile Gly Thr Asp Arg Gly Leu
225                 230                 235                 240
Val Val Pro Val Ile Arg Asn Cys Asp Gln Leu Ser Ser Gly Glu Ile
                245                 250                 255
Glu Leu Gln Leu Ala Asp Leu Ala Ser Arg Ala Arg Glu Gly Lys Leu
            260                 265                 270
Ala Ile His Glu Leu Glu Gly Gly Gly Phe Thr Ile Thr Asn Gly Gly
        275                 280                 285
Val Tyr Gly Ser Leu Leu Ser Thr Pro Ile Ile Asn Pro Pro Gln Val
    290                 295                 300
Gly Ile Leu Gly Met His Lys Ile Glu Lys Arg Pro Val Val Arg Glu
305                 310                 315                 320
Asp Ala Ile Val Ile Ala Asp Met Met Tyr Val Ala Met Ser Tyr Asp
                325                 330                 335
His Arg Ile Ile Asp Gly Lys Glu Ala Val Gly Phe Leu Val Asn Val
            340                 345                 350
Lys Glu Gln Leu Glu Gln Pro Glu Leu Leu Leu Lys Met
        355                 360                 365
<210>416
<211>906
<212>PRT
<213>Chlamydia trachomatis
<400>416
Ile Arg Leu Met Asp Ser Asp Phe Ala Arg His Val His Ser Ser Asp
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Ile Asp Trp Ile Glu Ser Leu Phe Glu Arg Phe Glu Lys His Glu Pro
             20                  25                  30
Met Asp Ser Ser Trp Lys Tyr Phe Phe Glu Gly Tyr Gln Val Gly Lys
          35                  40                  45
Thr Glu Gly Ser Pro Thr Glu Ser Ser His Asp Gln Phe Phe Thr Ser
      50                  55                  60
Leu Gln Glu Lys Lys Ala His Ser Leu Leu Met Ile Tyr Arg Tyr Tyr
 65                  70                  75                  80
Gly Tyr Leu Gln Gly Gln Val Ser Pro Ile Ser Ser Ser Glu Glu Ser
                 85                  90                  95
Ser Leu Val Thr Glu Lys Val Arg Asn Phe Asp Pro Gln Glu Glu Ile
            100                 105                 110
Pro Ser Leu Gly Leu Leu Pro Gln Ser Tyr Val Arg Ile Ala Asp Phe
        115                 120                 125
Ile Gln Val Leu Lys Glu Lys Tyr Cys Arg Ser Ile Ser Val Glu Thr
    130                 135                 140
Leu Asn Cys Ser Pro Glu Ile Gln Glu Tyr Val Trp Lys Leu Met Glu
145                 150                 155                 160
Gly Glu Lys Pro Ser Leu Thr Lys Glu Val Leu Leu Ala Arg Tyr Arg
                165                 170                 175
Asp Val Lys Arg Ala Val Ala Phe Glu Glu Phe Leu Gln Val Lys Phe
            180                 185                 190
Thr Gly Lys Lys Arg Phe Ser Leu Glu Gly Gly Glu Ser Leu Val Pro
        195                 200                 205
Met Leu Glu His Leu Ile Ala Cys Gly Val Lys Gln Gly Ile Asn Arg
    210                 215                 220
Tyr Val Met Gly Met Pro His Arg Gly Arg Leu Asn Val Leu Ala Asn
225                 230                 235                 240
Ile Phe Gly Lys Pro Tyr Arg Gln Ile Phe Met Glu Phe Glu Asp Ala
                245                 250                 255
Pro Gln Ile Arg Gly Leu Glu Thr Val Gly Asp Val Lys Tyr His Lys
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            260                 265                 270
Gly Tyr Val Ala Asn Arg Pro Glu Gln Asn Val Met Met Ala Leu Leu
        275                 280                 285
Pro Asn Pro Ser His Leu Glu Ser Val Asp Pro Val Val Glu Gly Ala
    290                 295                 300
Val Ala Ala Ile Gln His Gln Gly Glu Ala Gly Lys Glu Gln Ala Cys
305                 310                 315                 320
Leu Ala Val Leu Met His Gly Asp Ala Ala Leu Ala Gly Gln Gly Val
                325                 330                 335
Val Tyr Glu Thr Phe Gln Leu Ser Gly Ile Pro Gly Tyr Ser Thr Glu
            340                 345                 350
Gly Thr Val His Ile Val Val Asn Asn Gln Ile Gly Phe Thr Ala Gln
        355                 360                 365
Pro Arg Glu Ser Arg Ser Thr Pro Tyr Cys Thr Asp Ile Ala Lys Met
    370                 375                 380
Met Gly Ile Pro Val Phe Arg Val Asn Gly Glu Asp Val Leu Ala Cys
385                 390                 395                 400
Leu Gln Val Met Glu Tyr Ala Ile His Ile Arg Glu Arg Phe His Cys
                405                 410                 415
Asp Val Ile Ile Asp Leu Cys Cys Tyr Arg Lys Tyr Gly His Asn Glu
            420                 425                 430
Ser Asp Asp Pro Ser Val Thr Ala Pro Phe Leu Tyr Glu Glu Ile Lys
        435                 440                 445
Lys Lys Lys Gln Gly Ser Glu Leu Phe Lys Glu Ile Leu Leu His His
    450                 455                 460
Pro Glu Trp Asn Ile Ser Ser Asn Glu Leu Glu Arg Ile Asp Thr Glu
465                 470                 475                 480
Ile Ala His Val Leu Asn Gln Glu Tyr Ala Ser Leu Lys Asp Pro Gly
                485                 490                 495
Val Glu Arg Leu Asp Glu Cys Met His Cys Thr Arg Met Ala Ala Gly
            500                 505                 510
Glu Leu Leu Val Asp Asn Val Asp Thr Ser Leu Asp Lys Glu Ala Leu
        515                 520                 525
Phe Asp Leu Ser Ala Lys Leu Cys Asp Ile Pro Glu His Phe Ser Pro
    530                 535                 540
His Ala Lys Ile Arg Ser Leu Leu Asn Lys Arg Met Ser Met Ala Asp
545                 550                 555                 560
Gly Glu Ile Gly Tyr Asp Trp Gly Met Ala Glu Glu Val Ala Phe Ala
                565                 570                 575
Ser Leu Leu Gln Glu Gly Phe Ser Leu Arg Leu Ser Gly Gln Asp Ser
            580                 585                 590
Ile Arg Gly Thr Phe Ser Gln Arg Gln Leu Val Trp Thr Asp Val Gln
        595                 600                 605
Thr Gly Asp Thr Phe Ser Pro Leu Tyr His Leu Ser Pro Ser Gln Gly
    610                 615                 620
Ser Val Glu Leu Tyr Asn Ser Pro Leu Ser Glu Tyr Ala Val Leu Gly
625                 630                 635                 640
Phe Glu Tyr Gly Tyr Ala Gln Gln Ala Glu Lys Thr Leu Val Ile Trp
                645                 650                 655
Glu Ala Gln Phe Gly Asp Phe Ser Asn Gly Ala Gln Ile Ile Phe Asp
            660                 665                 670
Gln Tyr Ile Ser Ser Gly Ile Gln Lys Trp Asp Leu His Ser Asp Val
        675                 680                 685
Val Val Leu Leu Pro His Gly Tyr Glu Gly Gln Gly Pro Glu His Ser
    690                 695                 700
Ser Ala Arg Ile Glu Arg Tyr Leu Gln Leu Ala Ser Asp Trp Asn Phe
705                 710                 715                 720
Gln Val Val Leu Pro Ser Thr Pro Val Gln Tyr Phe Arg Ile Leu Arg
                725                 730                 735
Glu His Thr Lys Arg Asp Leu Ser Leu Pro Leu Ile Ile Phe Ser Pro
            740                 745                 750
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Lys Met Leu Leu Arg His Pro Gln Cys Val Ser Ser Ile Ala Glu Phe
755 760 765
Gly Met Lys Gly Gly Phe Lys Pro Phe Leu Glu Asp Glu Asn Pro Asn
770 775 780
Tyr His Ala Lys Val Leu Val Leu Cys Ser Gly Lys Ile Tyr Tyr Asp
785 790 795 800
Tyr Arg Ala Ser Leu Pro Lys Asp Leu Glu Cys Arg Phe Ala Cys Ile
805 810 815
Arg Val Glu Ser Leu Tyr Pro Leu Tyr Leu Glu Asp Leu Leu Val Leu
820 825 830
Ile Ser Lys Tyr Thr Glu Val His His Tyr Val Trp Leu Gln Glu Glu
835 840 845
Pro Gln Asn Met Gly Ala Phe Ser Tyr Phe Ala Leu Ala Thr Asp Glu
850 855 860
Ile Phe Pro Ser Lys Leu Gln Cys Val Cys Arg Pro Arg Ser Ser Ser
865 870 875 880
Thr Ala Thr Gly Ser Ala Ser Leu Ser Gln Lys Glu Leu Ser Met Leu
885 890 895
Met Glu Thr Leu Phe Ser Ile Gly Arg Glu
900 905

<210>417
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<212>PRT
<213>Chlamydia trachomatis
<400>417
Met Asn Gly Lys Thr Pro Leu Ala Leu Tyr Ile His Ile Pro Phe Cys
1 5 10 15
Ser Lys Lys Cys His Tyr Cys Ser Phe Tyr Thr Ile Pro Tyr Lys Glu
20 25 30
Glu Leu Met Arg Ser Tyr Cys Glu Ala Val Ile Lys Glu Gly Leu Lys
35 40 45
Lys Leu Ala Pro Leu Arg Cys Ser His Tyr Ile Asp Thr Val Phe Phe
50 55 60
Gly Gly Gly Thr Pro Ser Leu Val Pro Pro Ala Leu Ile Gln Asp Ile
65 70 75 80
Leu Val Ala Leu Glu Ala Gln His Ala Thr Glu Ile Thr Leu Glu Ala
85 90 95
Asn Pro Glu Asn Leu Ser Leu Glu Tyr Ile Gln Ala Leu Ala Leu Thr
100 105 110
Ser Ile Asn Arg Ile Ser Ile Gly Val Gln Thr Phe Asn Asp Pro Leu
115 120 125
Leu Lys Leu Leu Gly Arg Thr His Ser Ser Ser Lys Ala Ile Glu Ala
130 135 140
Phe Met Leu Cys Ser Gln Tyr Gly Phe Ser Asn Val Ser Ala Asp Leu
145 150 155 160
Ile Tyr Gly Leu Pro Thr Gln Ser Ile Ser Asp Phe Ile Val Asp Leu
165 170 175
Arg Gln Ala Ile Ser Leu Pro Ile Gln His Ile Ser Ile Tyr Asn Leu
180 185 190
Thr Ile Asp Pro His Thr Ser Phe Tyr Lys His Arg Lys Arg Ile Leu
195 200 205
Pro Ser Ile Ala Asp Asp Asp Ser Leu Ala Glu Met Ala Leu Ala Ala
210 215 220
Glu Glu Leu Leu Glu Asn Gln Gly Phe Thr Arg Tyr Glu Leu Ala Ser
225 230 235 240
Tyr Ala Lys Asn Gln Ala Ala Ser Lys His Asn Thr Tyr Tyr Trp Thr
245 250 255
Ala Lys Pro Phe Leu Gly Leu Gly Val Ser Ala Ser Gln Tyr Leu His
260 265 270
Gly Ile Arg Ser Lys Asn Leu Ser Arg Ile Ser His Tyr Leu Arg Leu
275 280 285

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Arg Ile Asn Ile Tyr Arg Leu
290 295

<210>418
<211>568
<212>PRT
<213>Chlamydia trachomatis
<400>418

Phe Leu Ile Glu Lys Met Asn Lys Lys Glu Arg Ile Asn Lys Lys Asn
1 5 10 15
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20 25 30
Ile Gly Ser Gln Gln Leu Ser Ser Phe Thr Lys Leu Ser Phe Asn Asn
35 40 45
Glu Ala Lys Leu Ser Gly Val Ala Thr Pro Thr Arg Asp Thr Asp Val
50 55 60
Val Pro Leu Gln Tyr Leu Gln Ala Arg Tyr Leu Ser Lys Asn Asp Pro
65 70 75 80
Asn Pro Asp Tyr Leu Pro Ile His Gly Gly Ser Met Thr Gly Asn Ile
85 90 95
Asn Met Gly Thr His Ser Val Phe Asn Leu Lys Gln Pro Thr Lys Pro
100 105 110
Ser Ala Thr Leu Pro Glu Glu Ser Ser Lys Pro Lys Asp Pro Arg Glu
115 120 125
Glu Glu Gly Phe Thr Lys Lys Thr Ala Glu Lys Gln Glu Gln Ala Ile
130 135 140
Lys Glu Tyr Asn Thr Lys Leu Ala Glu Tyr Gln Lys Lys Ile Asp Asp
145 150 155 160
Tyr Asn Ala Ala Trp Glu Ala Phe Tyr Ser Glu Ala Ala Thr Val Lys
165 170 175
Tyr Val Lys Gly Ile Val Asp Lys Ile Leu Asn Asn Asn Lys Leu Ser
180 185 190
Thr Ala Leu Asn Ser Ala Thr Glu Val Glu Lys Lys Ile Ala Leu Ala
195 200 205
Gln Lys Ala Leu Gly Ile Glu Ile Thr Ile Asn Pro Asp Ala Asp Thr
210 215 220
Asp Pro Val Pro Glu Thr Pro Lys Pro Thr Pro Thr Thr Asp Thr Glu
225 230 235 240
Glu Lys Glu Ser Pro Pro Leu Ser Tyr Asp Asp Leu Pro Ser Val Ile
245 250 255
Lys Asn Ala Gln Phe Val Val Thr Gln Ser Gln Asn Lys Leu Thr Gly
260 265 270
Asp Leu Lys Met Thr Asn Ala Gln Ile Ala Asn Ile Lys Thr Pro Asp
275 280 285
Thr Gly Asp Ser Asn Tyr Ala Ala Asn Val Thr Tyr Leu Glu Ser Lys
290 295 300
Leu Lys Gln Pro Lys Arg Ala Phe Leu Ser Asn Thr Leu Pro Thr Thr
305 310 315 320
Thr Ser Ser Pro Thr Ile Ser Phe Asn Gly Tyr Ile Pro Trp Leu Ser
325 330 335
Thr Thr Asn Gly Ser Ser Ser Pro Thr Glu Pro Asp Phe Lys Ser Glu
340 345 350
Leu Ala Asp Lys Cys Phe Thr Ala Glu Gln Glu Asn Leu Lys Val Lys
355 360 365
Thr Ala Gly Leu Leu Val Leu Ser Val Arg Gly Thr Trp Ser Pro Thr
370 375 380
Thr Ala Thr Ile Ala Asp Gly Ser Thr Gln Thr Pro Lys Thr Ile Ser
385 390 395 400
Val Asn Leu Thr Val Thr Pro Asp Asn Ser Ser Gly Thr Asn Thr Pro
405 410 415
Ser Ser Gly Ser Asp Ser Ser Gly Asp Ala Ser Ala Thr Thr Leu Thr
420 425 430

Ile Pro Leu Thr Leu Tyr Ser Arg Glu Ser Val Gln Leu Gln Leu Pro
435 440 445 Lys Thr Ala Ser
Asp Ile Lys Met Asp Thr Ser Ser Gln Thr Ser
450 455 460
Asn Gly Gly Ser Gly Ser Val Ser Ser Ser Ala Thr Glu Thr Leu Thr
465 470 475 480
Ile Pro Leu Thr Leu Tyr Ser Gly Glu Ser Val Gln Leu Gln Leu Pro
485 490 495
Ile Thr Thr Thr Ser Ser Val Lys Met Ala Thr Thr Thr Ser Gln Thr
500 505 510
Ser Asn Gly Gly Gly Asp Thr Ser Ser Gln Ile Thr Leu Ser Ser Trp
515 520 525
Ser Trp Glu Ala Ala Leu Tyr Pro Thr Asp Val Thr Val Thr Asn Lys
530 535 540
Thr Thr Pro Pro Thr Thr Lys Thr Pro Ser Ser Pro Ser Pro Asn Ser
545 550 555 560
Lys Met Ile Lys Asn Lys Ile Val
565

<210>419
<211>276
<212>PRT
<213>Chlamydia trachomatis
<400>419
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Glu Leu Gly Asp Gly Asp Glu Gly Val Phe Val Val Gly Gly Val Val
20 25 30
Leu Leu Val Thr Val Thr Ser Val Gly Tyr Arg Ala Ala Ser Gln Asp
35 40 45
Gln Asp Asp Ser Val Ile Cys Asp Glu Val Ser Pro Pro Pro Leu Glu
50 55 60
Val Trp Glu Val Val Val Ala Ile Phe Thr Leu Asp Val Val Val Ile
65 70 75 80
Gly Ser Cys Ser Cys Thr Asp Ser Pro Glu Tyr Ser Val Arg Gly Ile
85 90 95
Val Ser Val Ser Val Ala Glu Asp Asp Thr Glu Pro Leu Pro Pro Leu
100 105 110
Glu Val Trp Glu Glu Val Ser Ile Phe Met Ser Asp Ala Val Leu Ile
115 120 125
Gly Ser Cys Ser Cys Thr Asp Ser Leu Glu Tyr Ser Val Arg Gly Ile
130 135 140
Val Ser Val Val Ala Glu Ala Ser Pro Glu Glu Ser Asp Pro Leu Leu
145 150 155 160
Gly Val Leu Val Pro Leu Glu Leu Ser Gly Val Thr Val Arg Phe Thr
165 170 175
Asp Met Val Leu Gly Val Cys Val Leu Pro Ser Ala Ile Val Ala Val
180 185 190
Val Gly Leu His Val Pro Leu Thr Asp Lys Thr Ser Arg Pro Ala Val
195 200 205
Phe Thr Phe Arg Phe Ser Cys Ser Ala Val Lys His Leu Ser Ala Ser
210 215 220
Ser Leu Leu Lys Ser Gly Ser Val Gly Glu Glu Asp Pro Phe Val Val
225 230 235 240
Leu Ser His Gly Met Tyr Pro Leu Asn Glu Ile Val Gly Glu Leu Val
245 250 255
Val Val Gly Arg Val Leu Glu Arg Lys Ala Leu Leu Gly Cys Leu Ser
260 265 270
Leu Asp Ser Arg
275

<210>420
<211>183

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<212>PRT
<213>Chlamydia trachomatis
<400>420

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Asp Ser Ile Glu Ile Tyr Glu Val Lys Asp Leu Lys Asn Glu Ile Met
  1               5                  10                  15
Asn Asp Ile Lys Asn Asn Ile Ser Ser Ser Phe Trp Asn Pro Asn Lys
            20                  25                  30
Val Val Thr Lys Val Leu Leu Lys Val Ser Glu Thr Gly Ile Glu Ser
        35                  40                  45
Thr Pro Gly Ile Val Lys His Asn Gln Pro Ile Thr Gln Ser Glu Asn
    50                  55                  60
Pro Lys Asp Pro Thr Asp Ala Val Thr Phe Lys Tyr Leu Lys Glu Asn
65                  70                  75                  80
Tyr Thr Lys Glu Asn Asp Pro Asn Pro Gly Phe Leu Pro Thr Lys Gly
                85                  90                  95
Gly Thr Met Thr Gly Asp Ile Asp Met Gln Gly Asn Asn Val Thr Asp
            100                 105                 110
Ile Val Met Tyr Lys Gln Asn Gly Gln Gln Asp Pro Asp Asp Gly Ser
        115                 120                 125
Ala Val Thr Ile Gly Tyr Leu Asn Glu Lys Ala Asp Glu Ile Lys Ser
    130                 135                 140
Asn Asp Lys Ile Thr Arg Val Ser Gln Ala Tyr Arg Ile Leu Thr His
145                 150                 155                 160
Lys Tyr Pro Arg Tyr Thr Asn Phe Ser Val Leu Leu Lys Ile Leu Thr
                165                 170                 175
Leu Ser Leu Thr Gln Ile Phe
            180
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<210>421
<211>424
<212>PRT
<213>Chlamydia trachomatis
<400>421

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Gln Asn Tyr Thr Gly Val Ala Gly Leu Ser Asp Ile Asn Ser Gln Ile
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Ser Thr Leu His Gln Leu Leu Gly Ile Ala Glu Asp Pro Asp Thr Val
            20                  25                  30
Thr Asn Pro Asp Leu Leu Lys Thr Ser Gly Gly Thr Val Tyr Glu Asn
        35                  40                  45
Ile Asp Met Asn Ser Asn Thr Val Ser Asp Leu Gly Thr Pro Thr Asn
    50                  55                  60
Lys Asp Thr Lys Ser Ala Ile Asn Val Glu Phe Val Gln Ala Lys Ile
65                  70                  75                  80
Thr Ser Pro Gln Met Ala Phe Leu Lys Asn Asn Asp Thr Asn Leu Ser
                85                  90                  95
Asn Ile Thr Val Ser Glu Tyr Phe Asn Trp Leu Gln Ala Pro Thr Pro
            100                 105                 110
Asn Pro Ala Pro Thr Thr Pro Asp Asn Ser Asn Thr Pro Asn Asn Pro
        115                 120                 125
Pro Ser Ser Ser Asn Gly Ala Ser Ser Phe Ile Arg Glu Leu Ala Ala
    130                 135                 140
Thr Thr Thr Gly Ser Thr Asp Thr Glu Ile Thr Pro Ala Ala Glu Gly
145                 150                 155                 160
Thr Asp Leu Pro Asn Thr Thr Phe Ser Glu Lys Ser Pro Leu Trp Glu
                165                 170                 175
Glu Phe Phe Ser Tyr Pro Asp Ser Ser Arg Ser Glu Met Val Ile Gln
            180                 185                 190
Lys Thr Gly Ile Leu Thr Phe Ser Met Gln Gly Thr Trp Asn His Pro
        195                 200                 205
Asn Asn Thr Thr Pro Thr Ser Thr Asp Pro Ile Ser Leu Glu Leu Thr
    210                 215                 220
Val Thr Pro Pro Lys Thr Asp Thr Thr Pro Lys Ser Pro Ser Ser Ser
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Sequence Listing

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225                 230                 235                 240
Pro Lys Lys Thr Thr Ser Glu Ala Thr Ser Ser Pro Ala Thr Asn Gly
                245                 250                 255
Pro Thr Thr Ala Ser Ile Thr Lys Thr Phe Ser Arg Lys Tyr Asn Leu
            260                 265                 270
Ser Ala Thr Pro Ser Pro Thr Pro Thr Thr Pro Thr Thr Pro Asp Pro
        275                 280                 285
Ile Thr Lys Lys Phe Ser Leu Ala Ser Gly Gln Ser Cys Thr Leu Gln
    290                 295                 300
Ile Pro Val Gln Ala Thr Gly Ser Val Leu Lys Leu Lys Tyr Val Asn
305                 310                 315                 320
Pro Asn Asn Asn Ser Ser Gly Gly Ser Ser Gly Ser Gly Gly Asp Ser
                325                 330                 335
Gln Glu Glu Asn Pro Thr Ser Ser Ser Gly Thr Asn Asn Ala Pro Ala
            340                 345                 350
Ser Gln Thr Ser Arg Ile Gln Ile Arg Tyr Ala Ser Thr Thr Thr Thr
        355                 360                 365
Asp Ser Gly Ser Thr Thr Lys Asn Pro Ile Lys Ala Gln Ala Asp Glu
    370                 375                 380
Ser Thr Pro Pro Glu Thr Thr Ser Thr Gly Ile Thr Leu Thr Ser Phe
385                 390                 395                 400
Ser Trp Ser Leu Val Leu Thr Ser Gly Glu Ile Thr Lys Ala Lys Ser
                405                 410                 415
Thr Pro Ser Thr Pro Ser Gln Pro
            420
<210>422
<211>134
<212>PRT
<213>Chlamydia trachomatis
<400>422
Glu Lys Asn Ser Ser His Lys Gly Asp Phe Ser Glu Asn Val Val Phe
  1                 5                  10                  15
Gly Arg Ser Val Pro Ser Ala Ala Gly Val Ile Ser Val Ser Val Glu
             20                  25                  30
Pro Val Val Val Ala Ala Ser Ser Leu Ile Asn Glu Glu Ala Pro Phe
         35                  40                  45
Glu Glu Asp Gly Gly Leu Phe Gly Val Leu Leu Leu Ser Gly Val Val
     50                  55                  60
Gly Ala Gly Phe Gly Val Gly Ala Cys Ser Gln Leu Lys Tyr Ser Glu
 65                  70                  75                  80
Thr Val Ile Leu Glu Arg Phe Val Ser Leu Phe Phe Arg Lys Ala Ile
                 85                  90                  95
Cys Gly Glu Val Ile Leu Ala Cys Thr Asn Ser Thr Leu Ile Ala Leu
            100                 105                 110
Leu Val Ser Leu Phe Val Gly Val Pro Arg Ser Asp Thr Val Leu Leu
        115                 120                 125
Phe Ile Ser Ile Phe Ser
    130
<210>423
<211>496
<212>PRT
<213>Chlamydia trachomatis
<400>423
Leu Ile Lys Arg Gln Asn Met Asn Lys Lys Ile Ile Lys Glu Arg Val
  1                 5                  10                  15
Ser Ser Ser Val Pro Ser Thr Pro Ser Asp Gln Pro Ala Asp Pro Thr
             20                  25                  30
Asn Pro Val Thr Lys Met Leu Phe Glu Cys Lys Leu Ser Gln Asn Gln
         35                  40                  45
Gly Asp Ala Ser Ala Asp Val Asp Ala Met Val Thr Thr Ala His Val
     50                  55                  60
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Lys Leu Asp Ala Lys Asn Gln Gln Val Arg Lys Val Ala Lys Arg Glu
 65                  70                  75                  80
Glu Asp Gln Asn Val Ile Val Leu Ser Gln Leu Glu Gly Tyr Leu Gln
                85                  90                  95
Lys Gly Ser Arg Ser Ile Ala Gly Leu Phe Leu Pro Thr Ser Gly Gly
            100                 105                 110
Ala Met Val Gly Asp Ile Asn Met Gly Thr Ser Pro Gly Asn Thr Ile
        115                 120                 125
Lys Gly Leu Pro Ser Ser Trp Gly Ser Ala Met Phe Leu Gly Asn Glu
    130                 135                 140
Tyr Ala Ala Ser Val Gly Ile Val Gln Asp Val Val Gly Glu Tyr Arg
145                 150                 155                 160
Ala Arg Leu Asp Asp Leu Ile Asp Arg Ile Thr Lys Tyr Ala Gly Ser
                165                 170                 175
Gly Glu Gly Ser Leu Glu Gln Leu Ile Lys Asp Leu Gly Ser Pro Gln
            180                 185                 190
Glu Ser Gln Ala Gly Gln Thr Pro Ser Val Thr Leu Glu Lys Pro Thr
        195                 200                 205
Asp Ala Lys Trp Leu Leu Leu Ser Ala Lys Asn Ala Met Thr Gly Thr
    210                 215                 220
Leu Arg Phe Glu Lys Lys Gln Gly Ala Leu Pro Thr Thr Pro Asp Pro
225                 230                 235                 240
Thr Ile Thr Asn Leu Lys Ala Gly Gly Leu Gly Thr Ile Gly Thr Ala
                245                 250                 255
Thr Pro Lys Asp Lys Leu Gln Asn Ile Val Ser Val Ala Asp Leu Thr
            260                 265                 270
Thr Ile Leu Lys Asp Leu Gln Asn Asn Ala Pro Ser Glu Gly Thr Gly
        275                 280                 285
Ser His Thr Gly Ser Asp Val Gly Ser Arg Ser Gly Ser Gly Thr Asp
    290                 295                 300
Ser Val Ser Gly Gly Val Ala Gly Ala Ser Val Ser Thr Thr Thr Ala
305                 310                 315                 320
Ser Thr Phe Pro Glu Trp Thr Gly Gln Glu Val Pro Tyr Leu Val Glu
                325                 330                 335
Gln Ser Pro Asp Ser Gly Ser Gly Ser Leu Ser Val Gln Asn Pro Leu
            340                 345                 350
Lys Ser Ser Asn Ala Asp Asn Tyr Ile Lys Lys Asp Asn Gly Thr Tyr
        355                 360                 365
Ser Leu Leu Arg Arg Gly Leu Tyr Leu Ile Thr Phe Ala Tyr Glu Phe
    370                 375                 380
Gly Ser Pro Ile Gln Asn Gly Ala Val Thr Cys Thr Gly Thr Leu Arg
385                 390                 395                 400
Lys Lys Ser Asp Ser Thr Ser Ala Gly Gly Asp Val Ala Ala Gln Pro
                405                 410                 415
Thr Ser Gly Asp Ala Thr Ala Pro Thr Asp Pro Glu Pro Ser Pro Ala
            420                 425                 430
Phe Ser Val Val Gly Ser Ser Asp Gly Lys Thr Val Val Gly Ser Ala
        435                 440                 445
Tyr Ile Leu Val Pro Gly Asp Lys Ala Leu Ser Lys His Thr Leu Thr
    450                 455                 460
Leu Ala Leu Thr Pro Gly Lys Asn Thr Glu Val Ser Pro Thr Ser Ala
465                 470                 475                 480
Thr Ala Ser Lys Ser Tyr Val Ala Ile Ser Tyr Met Gly Ala Gly Tyr
                485                 490                 495
<210>424
<211>239
<212>PRT
<213>Chlamydia trachomatis
<400>424
Val Ala Met Ala Leu Tyr Leu Leu Pro Asn Thr Leu Gly Ser Lys Arg
  1               5                  10                  15
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Ser Glu Asp Leu Pro Ser Ser Val Gly Glu Ile Val Arg Asn Lys Ile
20 25 30
Gln Gly Leu Ile Val Glu Ser Asp Arg Gly Gly Arg Leu Phe Leu Ser
35 40 45
Leu Trp Lys Val Glu Glu Pro His Arg Phe Pro Leu Ala Val Met Ser
50 55 60
Lys Asn Asp Thr Ser Val Lys Ala Cys Asp Phe Tyr Leu Glu Pro Ile
65 70 75 80
Leu Lys Lys Gln Glu Ser Trp Gly Val Ile Ser Asp Ala Gly Leu Pro
85 90 95
Cys Ile Ala Asp Pro Gly Ala Lys Leu Val Arg Arg Ala Arg Thr Leu
100 105 110
Gly Ile Pro Val His Ala Val Ser Gly Pro Cys Ser Ile Thr Gln Ala
115 120 125
Leu Met Leu Ser Gly Leu Pro Gly Gln Asn Phe Thr Phe His Gly Tyr
130 135 140
Leu Pro Gln Asn Pro Lys Glu Arg Ser Arg Tyr Leu Arg Ser Cys Ser
145 150 155 160
Gly Lys Ser His Thr Gln Ile Cys Ile Glu Thr Pro Tyr Arg Asn Pro
165 170 175
Tyr Thr Phe Asp Ala Leu Leu Asp Gln Leu Pro Asp His Gly Glu Leu
180 185 190
Cys Val Ala Ile Asp Leu Met Gly Asp Gln Glu Tyr Val Ser Thr Arg
195 200 205
Ser Ile Ala Val Trp Asn Gln Ser Ser Asp Ile Glu Glu Val Arg Glu
210 215 220
Arg Leu Lys Lys Val Pro Ala Ile Phe Leu Phe Ile Thr Ser Phe
225 230 235
<210>425
<211>111
<212>PRT
<213>Chlamydia trachomatis
<400>425
Leu Lys Val Leu Ile Lys Arg Ser Lys Glu Leu Gln Leu Ser Cys Ser
1 5 10 15
Leu Gly Val Ala Lys Ile Phe Val Ser Lys Phe Pro Gln Thr Gly Leu
20 25 30
Phe Glu Ile Leu Ser Glu Phe Gln Lys Leu Ile Cys Gln Met Gly Asp
35 40 45
Lys Glu Ser Ile Glu Ala Ser Asp Ile Gln Ser Phe Val Glu Lys Lys
50 55 60
Glu Ala Ile Ser Leu Trp Lys Leu Arg Asp Ala Leu Leu Arg Lys Asp
65 70 75 80
Arg Val Ala Ala His Ser Leu Met Arg Ser Leu Val Ser Asp Met Gly
85 90 95
Glu Glu Pro Leu Gly Phe Ser Thr Phe Tyr Val Val Ser Thr Ser
100 105 110
<210>426
<211>191
<212>PRT
<213>Chlamydia trachomatis
<400>426
Glu Phe Ser Phe Pro Gly Phe Leu Tyr Leu Leu Ala Glu Ser Lys Cys
1 5 10 15
Leu Lys Lys Ile Lys Ser Gly Asn Lys Lys Asn Asn Pro Arg Ile Ile
20 25 30
Gly Phe Trp Arg Trp Ile Met Gly Asn Ser Gln Asn Ser Ile His Ile
35 40 45
Thr Ser Thr Lys Asp Phe Val Gln Tyr Ile Glu Arg Glu Arg Phe Arg
50 55 60
Val Ile Val Ile Gly Ser Ser Ser Leu Glu Asp Lys Asp Ile Phe Ser

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 65                  70                  75                  80
Glu Leu Tyr Ile Ser Gly Arg Lys Ser Phe Phe Asp Gly Gln Arg Leu
                85                  90                  95
Leu Gln Gln Glu Leu Leu Ser Trp Thr Asp His Phe Gly Leu Phe Ala
            100                 105                 110
Ser Gln Glu Thr Ile Gly Ile Tyr Gln Ala Glu Lys Met Ser Ser Ser
        115                 120                 125
Leu Gln Glu Phe Ile Ile Asp Tyr Thr Arg His Pro Asn Pro Asn Leu
    130                 135                 140
Thr Leu Phe Leu Phe Thr Asn Lys Ala Glu Leu Phe Ser Ser Leu Ser
145                 150                 155                 160
Ser Lys Leu Ser Asn Ala Leu Cys Leu Ser Leu Phe Gly Glu Tyr Phe
                165                 170                 175
Ala Glu Arg Asp Ala Arg Ile Ala Gln Gly Phe Asp Lys Thr Phe
            180                 185                 190
<210>427
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<212>PRT
<213>Chlamydia trachomatis
<400>427
Met Asn Met Leu Gly Val Gln Lys Lys Arg Ser Thr Arg Lys Thr Ala
  1               5                  10                  15
Ala Arg Lys Thr Val Val Arg Lys Pro Ala Ala Lys Lys Thr Ala Ala
             20                  25                  30
Lys Lys Ala Pro Val Arg Lys Val Ala Ala Lys Lys Thr Val Ala Arg
         35                  40                  45
Lys Thr Val Ala Lys Lys Thr Val Ala Ala Arg Lys Pro Val Ala Lys
     50                  55                  60
Xaa Ala Thr Ala Arg Lys Ala Pro Val Arg Xaa Ala Val Ala Lys Lys
 65                  70                  75                  80
Thr Val Ala Arg Lys Thr Val Ala Xaa Lys Thr Val Ala Ala Arg Lys
                85                  90                  95
Pro Val Ala Lys Lys Ala Ala Ala Lys Lys Ala Pro Val Arg Lys Val
            100                 105                 110
Ala Ala Lys Lys Thr Val Ala Arg Lys Thr Val Ala Lys Lys Thr Val
        115                 120                 125
Ala Ala Arg Lys Pro Val Ala Lys Lys Ala Thr Ala Lys Lys Ala Pro
    130                 135                 140
Val Arg Lys Ala Val Ala Lys Lys Thr Val Ala Arg Lys Thr Val Ala
145                 150                 155                 160
Lys Lys Thr Val Ala Ala Arg Lys Pro Val Ala Lys Lys Ala Thr Gly
                165                 170                 175
Lys Lys Ala Pro Val Arg Lys Val Ala Ala Lys Lys Thr Val Ala Arg
            180                 185                 190
Lys Thr Val Ala Lys Lys Thr Val Ala Ala Arg Lys Pro Val Ala Lys
        195                 200                 205
Lys Ala Thr Ala Lys Lys Ala Pro Val Arg Lys Ala Val Ala Lys Lys
    210                 215                 220
Thr Val Ala Lys Arg Val Ala Ser Thr Lys Lys Ser Ser Val Ala Val
225                 230                 235                 240
Lys Ala Gly Val Cys Met Lys Lys His Lys His Thr Ala Ala Cys Gly
                245                 250                 255
Arg Val Ala Ala Ser Gly Val Lys Val Cys Ala Ser Ala Ala Lys Arg
            260                 265                 270
Lys Met Asn Pro Asn Arg Ser Arg Thr Ala His Ser Trp Arg Gln Gln
        275                 280                 285
Leu Met Lys Leu Val Ala Arg
    290                 295
<210>428
<211>173
<212>PRT
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<213>Chlamydia trachomatis
<400>428

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Met Gly Asp Val Tyr Val Gly Met Thr Gly Leu Ser Val Glu Ile Gly
  1               5                  10                  15
Ser Thr Asp Ala Glu Gly Arg Leu Ile Leu Ala Asp Ala Ile Ser Tyr
             20                  25                  30
Ala Leu Lys Tyr Cys Asn Pro Thr Arg Ile Ile Asp Phe Ala Thr Leu
         35                  40                  45
Thr Gly Ala Met Val Val Ser Leu Gly Glu Ser Val Ala Gly Phe Phe
     50                  55                  60
Ala Asn Asn Asp Val Leu Ala Arg Asp Leu Ala Glu Ala Ser Ser Glu
 65                  70                  75                  80
Thr Gly Glu Ala Leu Trp Arg Met Pro Leu Val Glu Lys Tyr Asp Gln
                 85                  90                  95
Ala Leu His Ser Asp Ile Ala Asp Met Lys Asn Ile Gly Ser Asn Arg
            100                 105                 110
Ala Gly Ser Ile Thr Ala Ala Leu Phe Leu Gln Arg Phe Leu Glu Asp
        115                 120                 125
Asn Pro Val Ala Trp Ala His Leu Asp Ile Ala Gly Thr Ala Tyr His
    130                 135                 140
Glu Lys Glu Glu Leu Pro Tyr Pro Lys Tyr Ala Thr Gly Phe Gly Val
145                 150                 155                 160
Arg Cys Leu Ile His Tyr Met Glu Lys Phe Leu Ser Lys
                165                 170
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<210>429
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<213>Chlamydia trachomatis
<400>429

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Asp Ala Leu Val Leu Pro Phe Trp Met Lys Asn Pro Lys Ala Gln Glu
             20                  25                  30
Ala Ala Val Val Asp Glu Asp Tyr Lys Leu Val Tyr Gln Asn Ala Leu
         35                  40                  45
Ser Asn Phe Ser Gly Lys Lys Gly Glu Thr Ala Phe Leu Phe Gly Asn
     50                  55                  60
Asp His Thr Lys Glu Gln Lys Ile Val Leu Leu Gly Leu Gly Lys Ser
 65                  70                  75                  80
Glu Glu Val Ser Gly Thr Thr Val Leu Glu Ala Tyr Ala Gln Ala Thr
                 85                  90                  95
Thr Val Leu Arg Lys Ala Lys Cys Lys Thr Val Asn Ile Leu Phe Pro
            100                 105                 110
Thr Ile Ser Gln Leu Arg Phe Ser Val Glu Glu Phe Leu Thr Asn Leu
        115                 120                 125
Ala Ala Gly Val Leu Ser Leu Asn Tyr Asn Tyr Pro Thr Tyr His Lys
    130                 135                 140
Val Asp Thr Ser Leu Pro Phe Leu Glu Lys Val Thr Val Met Gly Ile
145                 150                 155                 160
Val Ser Lys Val Gly Asp Lys Ile Phe Arg Lys Glu Glu Ser Leu Phe
                165                 170                 175
Glu Gly Val Tyr Leu Thr Arg Asp Leu Val Asn Thr Asn Ala Asp Glu
            180                 185                 190
Val Thr Pro Glu Lys Leu Ala Ala Val Ala Lys Gly Leu Ala Gly Glu
        195                 200                 205
Phe Ala Ser Leu Asp Val Lys Ile Leu Asp Arg Lys Ala Ile Leu Lys
    210                 215                 220
Glu Lys Met Gly Leu Leu Ala Ala Val Ala Lys Gly Ala Ala Val Glu
225                 230                 235                 240
Pro Arg Phe Ile Val Leu Asp Tyr Gln Gly Lys Pro Lys Ser Lys Asp
                245                 250                 255
```

Arg Thr Val Leu Ile Gly Lys Gly Val Thr Phe Asp Ser Gly Gly Leu
260 265 270
Asp Leu Lys Pro Gly Lys Ala Met Ile Thr Met Lys Glu Asp Met Ala
275 280 285
Gly Ala Ala Thr Val Leu Gly Ile Phe Ser Ala Phe Ser Phe Pro Trp
290 295 300
Ser Phe Arg Ser Met
305

<210>430
<211>157
<212>PRT
<213>Chlamydia trachomatis
<400>430

Met Leu Phe Gly Tyr Leu Val Gly Phe Leu Ala Ala Asp Pro Glu Glu
1 5 10 15
Arg Met Thr Ser Gly Gly Lys Arg Val Val Val Leu Arg Leu Gly Val
20 25 30
Lys Ser Arg Val Gly Ser Lys Asp Glu Thr Val Trp Cys Arg Cys Asn
35 40 45
Ile Trp Asn Asn Arg Tyr Asp Lys Met Leu Pro Tyr Leu Lys Lys Gly
50 55 60
Ser Ser Val Ile Val Ala Gly Glu Leu Ser Leu Glu Ser Tyr Val Gly
65 70 75 80
Arg Asp Gly Ser Pro Gln Ala Ser Ile Ser Val Ser Val Asp Thr Leu
85 90 95
Lys Phe Asn Ser Gly Ser Ser Arg Pro Asp Ala Arg Gly Ser Asp Glu
100 105 110
Gly Arg Gln Arg Ala Asn Asp Asn Val Ser Ile Gly Phe Asp Gly Glu
115 120 125
Ser Leu Asp Thr Asp Ser Ala Leu Asp Lys Glu Val Tyr Ala Gly Phe
130 135 140
Gly Glu Asp Gln Gln Tyr Ala Ser Glu Asp Val Pro Phe
145 150 155

<210>431
<211>186
<212>PRT
<213>Chlamydia trachomatis
<400>431

Lys Ile Leu Leu Lys Ser Leu Lys Leu Pro Asp Val Ala Phe Asp Gln
1 5 10 15
Asn Asn Thr Cys Ile Leu Phe Val Asp Gly Glu Phe Ser Leu His Leu
20 25 30
Thr Tyr Glu Glu His Ser Asp Arg Leu Tyr Val Tyr Ala Pro Leu Leu
35 40 45
Asp Gly Xaa Pro Asp Asn Pro Gln Arg Lys Leu Ala Leu Tyr Glu Lys
50 55 60
Leu Leu Glu Gly Ser Met Leu Gly Gly Gln Met Ala Gly Gly Gly Val
65 70 75 80
Gly Val Ala Thr Lys Glu Gln Leu Ile Leu Met His Cys Val Leu Asp
85 90 95
Met Lys Tyr Ala Glu Thr Asn Leu Leu Lys Ala Phe Ala Gln Leu Phe
100 105 110
Ile Glu Thr Val Val Lys Trp Arg Thr Val Cys Ser Asp Ile Ser Val
115 120 125
Asp Glu Asn Pro Leu Leu Ile Pro Cys His Lys Cys Leu Lys Gly Val
130 135 140
Ala Glu Glu Phe Asn Leu Leu Gln Gln Glu Ser Val His Lys Ser Phe
145 150 155 160
Ala Ile Ile Gln Gln Lys Glu Glu Gly Leu Leu Pro Phe Val Phe Lys
165 170 175
Pro Pro Pro Ser Ser Leu His Phe Phe Gly

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180 185

<210>432
<211>618
<212>PRT
<213>Chlamydia trachomatis
<400>432

Asn Ser Ser Ile Phe Tyr Arg Pro Gln Asp Trp Ser His Leu Ala Tyr
1 5 10 15
Arg Asn Cys Arg His Phe Leu Val Asn Gly Arg Met Leu Ile Asn Leu
20 25 30
Arg Gly Thr Asp Leu Ser Ser Gln Lys Phe Ala Thr Asp Ser Tyr Ile
35 40 45
Ala Asp Pro Tyr Ser Lys Asn Ile Tyr Ser Pro Gln Leu Phe Gly Ser
50 55 60
Pro Lys Gln Glu Lys Asp Tyr Ala Phe Ser Tyr Leu Lys Tyr Glu Asp
65 70 75 80
Phe Asp Trp Glu Gly Asp Thr Pro Leu His Leu Pro Lys Glu Asn Tyr
85 90 95
Phe Ile Tyr Glu Met His Val Arg Ser Phe Thr Arg Asp Pro Ser Ser
100 105 110
Gln Val Ser His Pro Gly Thr Phe Leu Gly Ile Ile Glu Lys Ile Asp
115 120 125
His Leu Lys Gln Leu Gly Val His Ala Val Glu Leu Leu Pro Ile Phe
130 135 140
Glu Phe Asp Glu Thr Val His Pro Phe Lys Asn Gln Asp Phe Pro His
145 150 155 160
Leu Cys Asn Tyr Trp Gly Tyr Ser Ser Val Asn Phe Phe Cys Pro Ser
165 170 175
Arg Arg Tyr Thr Tyr Gly Ala Asp Pro Cys Ala Pro Ala Arg Glu Phe
180 185 190
Lys Thr Leu Val Lys Ala Leu His Arg Ala Gly Ile Glu Val Ile Leu
195 200 205
Asp Val Val Phe Asn His Thr Gly Phe Glu Gly Thr Ser Cys Pro Leu
210 215 220
Pro Trp Ile Asp Leu Lys Ser Tyr Tyr Met Val Asn Asp His Gly Asp
225 230 235 240
Leu Met Asn Phe Ser Gly Cys Gly Asn Thr Val Asn Thr Asn Thr Pro
245 250 255
Thr Thr Leu Lys Trp Ile Leu Asp Ala Leu Arg Tyr Trp Val Gln Glu
260 265 270
Met His Val Asp Gly Phe Arg Phe Asp Leu Ala Ser Val Phe Ser Arg
275 280 285
Asp Pro Gln Gly Val Pro Leu Pro Leu Thr Pro Ile Leu Gln Ala Ile
290 295 300
Ser Ser Asp Ser Ile Leu Ser Glu Thr Lys Leu Ile Ala Glu Pro Trp
305 310 315 320
Asp Ala Gly Gly Leu Tyr Gln Leu Gly His Phe Pro Ser Ile Ser Thr
325 330 335
Arg Trp Ser Glu Trp Asn Gly Cys Tyr Arg Asp His Val Lys Ala Phe
340 345 350
Leu Asn Gly Asp Ala His Gln Val Ser Ser Phe Ala Ser Arg Ile Ser
355 360 365
Gly Ser His Asp Ile Tyr Pro Asn Gly Lys Pro Thr Asn Ser Ile Asn
370 375 380
Tyr Ile Cys Ser His Asp Gly Phe Thr Leu Tyr Asp Thr Val Ala Tyr
385 390 395 400
Asn Asp Lys His Asn Glu Glu Asn Gly Glu Tyr Asn Arg Asp Gly Thr
405 410 415
Ser Ala Asn Tyr Ser Tyr Asn Phe Gly Cys Glu Gly Glu Thr Thr Asp
420 425 430
Pro Thr Ile Cys Ala Leu Arg Glu Arg Gln Met Lys Asn Phe Phe Leu

Application Page

Substitute Sheet (Rule 26)

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        435                 440                 445
Ala Leu Phe Leu Ser Gln Gly Ile Pro Met Ile Gln Ser Gly Asp Glu
    450                 455                 460
Tyr Gly His Thr Ala Tyr Gly Asn Asn Asn His Trp Cys Leu Asp Thr
465                 470                 475                 480
Lys Ile Asn Tyr Phe Leu Trp Asp Arg Leu Ala Glu Arg Lys Glu Leu
                485                 490                 495
Phe Ser Phe Leu Cys Gln Val Ile Ala Leu Arg Lys Ala Tyr Thr Glu
            500                 505                 510
Leu Phe Asn Thr Ser Phe Leu Ser Glu Asp Thr Ile Thr Trp Leu Asn
        515                 520                 525
Thr Lys Gly Ser Pro Arg Glu Trp Gly Ala Asp His Tyr Leu Ala Phe
    530                 535                 540
Xaa Leu Lys His Leu Asn Tyr Ser Leu Phe Val Xaa Phe Tyr Ser Gly
545                 550                 555                 560
Asn Glu Arg Ile Glu Ile Ser Leu Pro Lys Pro Arg Lys Glu His Leu
                565                 570                 575
Ala Tyr Glu Lys Ile Val Asp Ser Thr Thr Gly Phe Phe Ser Gln Ile
            580                 585                 590
Leu Ser Pro Lys Leu Ser Leu Glu Pro Tyr Ser Ser Leu Val Ala Ile
        595                 600                 605
Ser Arg Arg Lys Thr Ser Leu Glu Ser Arg
    610                 615
<210>433
<211>303
<212>PRT
<213>Chlamydia trachomatis
<400>433
Arg Val Trp Phe Ser Glu Pro Gln Glu Asp Gly Leu Gln Pro Leu Trp
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His Met Asn Ile Leu Thr Gly Thr Leu Arg Thr Gly Gly Glu Lys Asn
             20                  25                  30
Lys Val Lys Lys Leu Asn Leu Leu Val Leu Leu Gly Val Phe Cys Gly
         35                  40                  45
Val Ser Gly Val Gly Asp Ala Asp Val Lys Val Ser Asp Ala Leu Ser
     50                  55                  60
Gln Ser Ile Leu Val Glu Pro Lys Ile Arg Val Leu Leu Leu Ser Glu
 65                  70                  75                  80
Ser Thr Thr Ala Leu Ile Glu Ala Lys Gly Ala Phe Ser Val Phe Gly
                 85                  90                  95
Asp Gly Glu Leu Leu Arg Val Ser Ser Gln Gly Gln Arg Cys Ala Ala
            100                 105                 110
His Ala Leu Tyr Gly Gly Ile Arg Trp Gly Glu Asn Tyr Pro Asn Val
        115                 120                 125
Glu Cys Leu Lys Ile Glu Pro Leu Asp Gly Ala Ala Ser Leu Phe Val
    130                 135                 140
Asn Gly Ile Gln Tyr Lys Gly Ala Ile Tyr Ile His Arg Thr Asp Arg
145                 150                 155                 160
Ser Cys Leu Phe Ile Val Asn Glu Leu Ala Leu Glu Asp Tyr Leu Lys
                165                 170                 175
Ser Thr Leu Ser Val Lys Tyr Leu Lys Glu Leu Asp Lys Glu Ala Leu
            180                 185                 190
Ser Ala Cys Val Ile Leu Glu Arg Thr Ala Leu Tyr Glu Arg Leu Leu
        195                 200                 205
Ala Gly Asn Ser His Ser Phe Trp His Val Asn Ala Gln Glu Asp Arg
    210                 215                 220
Tyr Gly Gly Phe Gly Val Thr Ser Gln Phe Tyr Gly Val Glu Glu Ala
225                 230                 235                 240
Val Asp Trp Thr Ser Arg Leu Val Leu Asp Asn Pro Glu Gly Leu Val
                245                 250                 255
Phe Asn Ala Asp Tyr Leu Leu Arg Ala Asn Val Asp His Leu Ala Ile
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SEQUENCE LISTING

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            260                 265                 270
Glu Gly Tyr Asn Ala Arg Gln Ile Leu Glu Lys Phe Tyr Lys Asp Ala
        275                 280                 285
Asp Leu Val Val Ile Glu Ser Trp Glu Asp Asp Cys Lys Gly Ala
    290                 295                 300
<210>434
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<212>PRT
<213>Chlamydia trachomatis
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Thr Ile Ala Asn Thr Tyr Met Thr His Lys Ile Ser Val Leu His Gln
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Asp Lys Lys Phe Asp Phe Ser Leu Arg Pro Lys Lys Leu Thr Glu Phe
             20                  25                  30
Cys Gly Gln Lys Gln Leu Lys Glu Arg Leu Asp Leu Phe Leu Arg Ala
         35                  40                  45
Ala Val Gln Arg Asn Glu Val Pro Gly His Cys Leu Phe Tyr Gly Pro
     50                  55                  60
Pro Gly Leu Gly Lys Thr Ser Leu Ala His Ile Met Ala Asn Thr Ile
 65                  70                  75                  80
Gly Lys Gly Leu Val Ile Ala Ser Gly Pro Gln Leu Leu Lys Pro Ser
                 85                  90                  95
Asp Leu Ile Gly Leu Leu Thr Gly Leu Gln Glu Gly Asp Ile Phe Phe
            100                 105                 110
Ile Asp Glu Ile His Arg Met Gly Lys Ala Ala Glu Glu Tyr Leu Tyr
        115                 120                 125
Pro Ala Met Glu Asp Phe Lys Val Asp Ile Thr Leu Asp Ser Gly Pro
    130                 135                 140
Gly Ala Arg Ser Val Arg Leu Asp Leu Ala Pro Phe Thr Leu Val Gly
145                 150                 155                 160
Ala Thr Thr Arg Ala Gly Met Leu Ser Glu Pro Leu Arg Thr Arg Phe
                165                 170                 175
Ala Phe Thr Gly Arg Val Asp Tyr Tyr Thr Asp Glu Asp Leu Val Ser
            180                 185                 190
Ile Leu Ser Arg Ser Ser Gln Leu Leu Ala Ile Glu Ala Asn Gln Glu
        195                 200                 205
Thr Leu Leu Glu Ile Ala Arg Arg Ala Arg Gly Thr Pro Arg Leu Ala
    210                 215                 220
Asn Asn Leu Leu Arg Trp Val Arg Asp Phe Ala Gln Met Arg Glu Gly
225                 230                 235                 240
Asn Cys Ile Asn Ser Arg Pro
                245
<210>435
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<212>PRT
<213>Chlamydia trachomatis
<400>435
Met Gly Ile Lys Glu Asp Asn Trp Ile Arg Lys Met Ala Ile Glu Glu
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Gly Met Ile Glu Pro Phe Ala Asp Ser Gln Val Lys Leu His Pro Glu
             20                  25                  30
Thr Gly Glu Lys Leu Ile Ser Tyr Gly Leu Ser Ser Tyr Gly Tyr Asp
         35                  40                  45
Leu Arg Ile Ser Arg Glu Phe Lys Val Phe Thr Asn Val Tyr Asn Ser
     50                  55                  60
Leu Val Asp Pro Lys Cys Phe Thr Glu Asp Ala Leu Ile Ser Ile Val
 65                  70                  75                  80
Asp Asp Val Cys Ile Ile Pro Pro Asn Ser Phe Ala Leu Ala Arg Ser
                 85                  90                  95
Val Glu Tyr Phe Arg Ile Pro Arg Asn Val Leu Thr Val Cys Ile Gly
            100                 105                 110
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Lys Ser Thr Tyr Ala Arg Cys Gly Leu Ile Val Asn Val Thr Pro Phe
        115                 120                 125
Glu Pro Glu Trp Glu Gly Tyr Val Thr Ile Glu Ile Ser Asn Thr Thr
    130                 135                 140
Pro Leu Pro Ala Lys Val Tyr Ala Asn Glu Gly Ile Ala Gln Val Leu
145                 150                 155                 160
Phe Phe Glu Gly Asp Ala Ala Cys Asp Val Ser Tyr Ala Glu Arg Gln
                165                 170                 175
Gly Lys Tyr Gln Lys Gln Gln Gly Ile Thr Ile Pro Phe Val
            180                 185                 190
<210>436
<211>109
<212>PRT
<213>Chlamydia trachomatis
<400>436
Asn Ser Cys Val Asn Thr Lys Val Ala Asp Trp Arg Thr Lys Lys Leu
  1               5                  10                  15
Ala Pro Ile Phe Pro Leu Asp Tyr Glu Asp Phe Phe Thr Val Phe Met
             20                  25                  30
Lys Lys Gln His Tyr Thr Leu Pro Gly Asn Val Ser Asn Met Arg Ile
         35                  40                  45
Leu Ser Pro Val Arg Pro Val Ser Glu Thr Ala Leu Thr Thr Ile Ile
     50                  55                  60
Ile Ser Gly Leu Glu Glu Glu Asp Lys Leu Gly Leu Leu Gly Gln Val
 65                  70                  75                  80
Gln Gln Phe Leu Phe Asp Ala Glu Glu Ala His Pro Gln Arg Gly Glu
                 85                  90                  95
Ser Ile Leu Ile Gln Asn Val Leu Asp Asp Ile Thr Gln
            100                 105
<210>437
<211>168
<212>PRT
<213>Chlamydia trachomatis
<400>437
Val Phe Cys Ala Gly Ala Tyr Phe Gly Cys Ala Arg Phe Glu Phe Leu
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Glu Pro Thr Gly Ser Leu Phe Val Ala Lys Arg Asp Leu Gly Phe Phe
             20                  25                  30
Pro Gly Ala Ala Asn Gly Pro Ala Tyr Glu Ser Ala Phe Ser Tyr Thr
         35                  40                  45
Ser Ser Ser Gly Val Leu Ala Ala Pro Leu Val Phe Ala Asp Phe Pro
     50                  55                  60
Gly Glu Ser Phe Ser Leu Phe Asn Gly Gly Cys Cys Phe Glu Asn Ala
 65                  70                  75                  80
Glu His Phe Pro Glu Ile Cys Ile Glu Ala Arg Tyr Asn Asn Leu Leu
                 85                  90                  95
Gly Lys Pro Ala Ala Ile Leu Ser Arg Arg Leu Asp Lys Gly Leu Val
            100                 105                 110
Val Leu Ser Gly Pro His Ile Glu Tyr Leu Pro Glu Phe Cys Ser Leu
        115                 120                 125
Gln Glu Asp Asn Val Ile Gln Ala Arg Glu Gln Ile Ala Ala His Ser
    130                 135                 140
Ser Ser Leu Glu Glu Tyr Lys Gln Phe Leu Ile His Arg Leu Leu Ser
145                 150                 155                 160
Asn Val Val Glu His Val Leu Tyr
                165
<210>438
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>438
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Pro Tyr Tyr Leu Arg His Thr Val Arg Trp Leu Lys Gln Val Ala Ala
            20                  25                  30
Pro Phe Gln Met Glu Val Cys Arg Val Asn Gly Arg Phe Leu Ile His
        35                  40                  45
Glu Pro Leu Trp Glu Asp Thr Thr Gln Leu Leu Val Ile Pro Gly Gly
    50                  55                  60
Ala Asp Val Pro Tyr His Asn Val Leu His Gly Leu Gly Thr Ala Arg
65                  70                  75                  80
Ile Asp Asn Tyr Val Arg Glu Gly Gly Cys Tyr Leu Gly Ile Leu Arg
                85                  90                  95
Arg Ser Leu Phe Trp Leu Arg Ala Val
            100                 105
<210>439
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<212>PRT
<213>Chlamydia trachomatis
<400>439
Ser Ala Val Phe Lys Leu Glu Ser Leu Leu Ser Met Met Ser Ser Pro
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His Pro Met Ser Ser Ser Arg Asn Thr Pro Leu Gly Val Phe Tyr Ser
            20                  25                  30
Leu Leu Ala Cys Phe Tyr Trp Gly Met Val Phe Val Ile Pro Ser Met
        35                  40                  45
Leu Gly Asn Phe Ala Asp Leu Asp Ile Val Leu Thr Arg Tyr Ser Val
    50                  55                  60
Phe Gly Ile Cys Ser Leu Ile Thr Ile Leu Tyr Lys Arg Ser Asn Ile
65                  70                  75                  80
Phe Lys Thr Val Pro Phe Phe Leu Trp Lys Lys Gly Ile Leu Trp Ala
                85                  90                  95
Phe Leu Ile Asn Ile Ala Tyr Tyr Phe Gly Ile Ala Gln Ala Val Arg
            100                 105                 110
Tyr Ser Gly Ser Ala Val Thr Val Ile Ile Ala Gly Leu Ala Pro Ile
        115                 120                 125
Ala Ile Leu Phe Tyr Ser Asn Ile Lys Lys Lys Met Leu Ser Tyr Ser
    130                 135                 140
Phe Leu Leu Ser Met Ser Gly Ile Ile Val Val Gly Ile Ile Leu Ser
145                 150                 155                 160
Asn Val Ser Glu Phe Gln Ser Glu Ser Ser Ser Ser Leu Pro Leu Tyr
                165                 170                 175
Leu Leu Gly Phe Gly Cys Val Thr Ala Ala Thr Ser Ile Trp Ala Gly
            180                 185                 190
Tyr Ile Ile Tyr Asn His Asp Phe Leu Glu Gln His Ser Glu Ile Ser
        195                 200                 205
Pro Asp Thr Trp Cys His Met Leu Gly Ile Ser Ser Leu Ile Ile Cys
    210                 215                 220
Leu Pro Leu Ile Ile Leu Gly Asp Thr Phe Gly Ile Thr His Val Thr
225                 230                 235                 240
Arg Asn Phe Leu Phe His Thr Pro Leu Ser Glu Arg Cys Leu Xaa Ile
                245                 250                 255
Val Leu Cys Ser Ala Met Gly Ile Phe Pro Leu Arg Glu Leu Ser Gln
            260                 265                 270
Leu Gly Thr Lys Leu Leu Phe Ile Cys Leu Gln Leu Phe
        275                 280                 285
<210>440
<211>110
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<213>Chlamydia trachomatis
<400>440
Phe Ser Ile Ser Tyr Pro Ser Phe Arg Lys Met Pro Xaa Asp Arg Ser
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Leu Leu Cys Tyr Gly Asp Phe Ser Ser Ser Arg Ala Ile Ala Ala Trp
            20                  25                  30
Asn Lys Ala Ser Leu His Leu Ser Thr Ala Leu Leu Gly Ala Leu Leu
        35                  40                  45
Ile Phe Glu Pro Ile Phe Gly Trp Ile Leu Ser Tyr Leu Cys Lys Arg
    50                  55                  60
Glu Met Pro Ser Phe Gln Glu Gly Leu Gly Phe Phe Leu Met Leu Gly
65                  70                  75                  80
Ala Ser Leu Cys Leu Leu Leu Ala Gln Lys Lys Ala Ser Glu Gln Glu
                85                  90                  95
Thr Pro Ser Glu Thr Leu Ile Thr Thr Glu Ser Glu Ala Asn
            100                 105                 110
<210>441
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<213>Chlamydia trachomatis
<400>441
Lys Asp Met Gly Cys Glu Glu Lys Leu Ser Gly Ile Leu Glu Leu Ile
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Leu Pro Glu Asp Pro Leu Ser Asp Gln Thr Gly Tyr Ala Phe Leu Arg
            20                  25                  30
Val Pro Tyr Lys Asn Ser Leu Val Thr Val Cys Gly His Leu Pro Leu
        35                  40                  45
Ser Leu Phe Lys Ile Gly Ser Ser Val Asp Leu Thr Gly His Trp Ser
    50                  55                  60
Val Asp Ala Ser Gly Ala Leu Val Phe Arg Phe Thr Ser Ala Ala Thr
65                  70                  75                  80
Tyr Ser Pro Asp Ser Gly Ile Ile Ala Tyr Leu Asn Ala Gln Ile Lys
                85                  90                  95
Gly Val Gly Pro Lys Leu Ala Gln Lys Ile Val Ser Thr Phe Gly Glu
            100                 105                 110
Asp Thr Leu Thr Val Leu Asp Ser Cys Pro Ser Lys Leu Val Glu Val
        115                 120                 125
Asp Gly Ile Ser Pro Ala Arg Cys Glu Asp Phe Ser Lys Gln Leu Gln
    130                 135                 140
Glu Gln Arg Asp Leu Arg His Ala Leu Leu Phe Leu Gln Arg His Gly
145                 150                 155                 160
Ile Ala Ile His Tyr Gly Leu Arg Leu Tyr Lys Lys Tyr Gln Asn Gln
                165                 170                 175
Thr Ile Glu Lys Val Cys Gln Asp Pro Phe Leu Leu Ala Lys Glu Met
            180                 185                 190
Tyr Gly Ile Gly Phe Lys Thr Ala Asp Leu Ile Ala Thr Cys Leu Gly
        195                 200                 205
Val Pro Leu Asn Ser Pro Asn Arg Ile Val Ala Gly Ile Gln Tyr Ser
    210                 215                 220
Leu Asp Glu Leu Gln Glu Glu Gly His Thr Cys Tyr Pro Leu Asn Asp
225                 230                 235                 240
Phe Ile Val Leu Val Glu Lys Leu Leu Asn Glu Glu Ala Pro Glu Glu
                245                 250                 255
Ile Ile Arg Lys Glu Glu Ile Arg Thr Gln Ile His Phe Leu Ser Arg
            260                 265                 270
Gln Lys Thr Val Tyr Val Lys Glu Leu Glu Gln Asp Thr Tyr Ile Trp
        275                 280                 285
Ser Arg Gln Leu Phe Leu Ala Glu Gln Gln Ile Ala Ile Asp Ile Arg
    290                 295                 300
Arg Leu Leu Phe Ser Ser Lys Arg Ile Arg Ser Ile Asn Thr Gln Glu
305                 310                 315                 320
Ala Ile Leu Glu Val Glu Asn Leu Leu Asp Leu Lys Leu Glu Glu Lys
                325                 330                 335
Gln Lys Glu Ala Leu His Ala Ser Ser Ser Gln Lys Ile His Ile Ile
```

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            340                 345                 350
Ser Gly Gly Pro Gly Thr Gly Lys Ser Thr Ile Thr Arg Ala Ile Leu
        355                 360                 365
Ser Ile Phe Glu Lys Ile Ser Ser Pro Lys Lys Ile Ile Leu Ala Ala
    370                 375                 380
Pro Thr Gly Lys Ala Ala Lys Arg Met Thr Glu Ile Thr Gly Lys Arg
385                 390                 395                 400
Thr Gln Thr Ile His Ser Leu Leu Gln Tyr Asp Phe Lys Thr Leu Ser
                405                 410                 415
Phe Arg Lys Asn His Glu Asp Pro Ile Asp Cys Asp Leu Val Ile Val
            420                 425                 430
Asp Glu Ser Gly Met Ile Asp Thr Ile Leu Leu Gln Arg Phe Leu Ala
        435                 440                 445
Ala Leu Pro Asp His Ala Ile Leu Ile Leu Ile Gly Asp Val His Gln
    450                 455                 460
Leu Pro Ser Val Gly Pro Gly Asn Val Leu Lys Asp Leu Ile Leu Ser
465                 470                 475                 480
His His Ile Glu Val Thr Tyr Leu Thr Lys Ile Phe Arg Gln Leu Gln
                485                 490                 495
Asn Ser Asn Ile Ile Thr Asn Ala His Lys Val Asn Gln Gly Glu Phe
            500                 505                 510
Pro Val Leu Asn Ser Ser Ser Gly Lys Lys Asp Phe Leu Phe Phe Gln
        515                 520                 525
Lys Glu Asp Pro Glu Glu Ala Ile Lys His Ile Ile His Leu Val Ser
    530                 535                 540
Asp Phe Val Pro Lys Lys Phe Gly Ile Phe Thr Lys Asp Ile Gln Val
545                 550                 555                 560
Leu Ala Pro Xaa Arg Lys Gly Val Leu Gly Ile Leu Asn Leu Asn Arg
                565                 570                 575
Glu Leu Lys Ala Ala Leu Asn Pro Asn Lys Leu Phe Ile Gln Gly Lys
            580                 585                 590
Phe His Ser Phe Ser Thr Gly Asp Arg Val Met Gln Thr Arg Asn Asn
        595                 600                 605
Tyr Asn Lys Glu Val Phe Asn Gly Asp Ile Gly Tyr Val Thr Ser Ile
    610                 615                 620
Asp Leu Ser Thr Lys Ser Leu Ile Val Cys Val Asp Gly Arg Tyr Ile
625                 630                 635                 640
Ser Tyr Ser Gln Ala Glu Leu Asn Asp Leu Ile Pro Ala Tyr Ala Thr
                645                 650                 655
Ser Ile His Lys Tyr Gln Gly Ser Glu Thr Ser Cys Ile Ile Leu Pro
            660                 665                 670
Ile His Thr Ser His Tyr Val Met Leu Tyr Arg Asn Leu Leu Tyr Thr
        675                 680                 685
Ala Ile Thr Arg Gly Lys Lys Leu Val Ile Leu Val Gly Thr Lys Lys
    690                 695                 700
Ala Val Ala Ile Ala Val Arg Asn Asp Lys Val Gln His Arg Cys Thr
705                 710                 715                 720
Gly Leu Gln Gln Ala Met His Ser Leu Leu Asn Lys Pro Thr Pro Leu
                725                 730                 735
Phe Ser Pro Tyr Thr Ile Cys Arg Pro Ser Leu Gly
            740                 745
<210>442
<211>563
<212>PRT
<213>Chlamydia trachomatis
<400>442
Lys Arg Ser Phe Ser Val Gln Leu Glu Arg Arg Glu Ile Val Glu Ser
  1                 5                  10                  15
Ser Arg Ile Leu Ile Thr Ser Ala Leu Pro Tyr Ala Asn Gly Pro Leu
             20                  25                  30
His Phe Gly His Ile Thr Gly Ala Tyr Leu Pro Ala Asp Val Tyr Ala
```

```
          35                  40                  45
Arg Phe Gln Arg Leu Gln Gly Lys Glu Val Leu Tyr Ile Cys Gly Ser
     50                  55                  60
Asp Glu Tyr Gly Ile Ala Ile Thr Leu Asn Ala Glu Leu Ala Gly Met
 65                  70                  75                  80
Gly Tyr Gln Glu Tyr Val Asp Met Tyr His Lys Leu His Lys Asp Thr
                 85                  90                  95
Phe Lys Lys Leu Gly Ile Ser Val Asp Phe Phe Ser Arg Thr Thr Asn
            100                 105                 110
Ala Tyr His Pro Ala Ile Val Gln Asp Phe Tyr Arg Asn Leu Gln Glu
        115                 120                 125
Arg Gly Leu Val Glu Asn Gln Val Thr Glu Gln Leu Tyr Ser Glu Glu
    130                 135                 140
Glu Gly Lys Phe Leu Ala Asp Arg Tyr Val Val Gly Thr Cys Pro Lys
145                 150                 155                 160
Cys Gly Phe Asp Arg Ala Arg Gly Asp Glu Cys Gln Gln Cys Gly Ala
                165                 170                 175
Asp Tyr Glu Ala Arg Asp Leu Lys Glu Pro Arg Ser Lys Leu Thr Gly
            180                 185                 190
Ala Ala Leu Ser Leu Arg Asp Thr Glu His Ala Tyr Leu His Leu Glu
        195                 200                 205
Arg Met Lys Glu Asp Leu Leu Ala Phe Val Gln Gly Ile Tyr Leu Arg
    210                 215                 220
Pro His Met Arg Asn Phe Val Thr Asp Tyr Ile Glu His Leu Arg Pro
225                 230                 235                 240
Arg Ala Val Thr Arg Asp Leu Ser Trp Gly Ile Pro Val Pro Asp Leu
                245                 250                 255
Glu Asn Lys Val Phe Tyr Val Trp Phe Asp Ala Pro Ile Gly Tyr Ile
            260                 265                 270
Ser Gly Thr Met Asp Trp Ala Ala Ser Ile Gly Asp Pro Glu Ala Trp
        275                 280                 285
Lys Lys Phe Trp Leu Asp Asp Thr Val Thr Tyr Ala Gln Phe Ile Gly
    290                 295                 300
Lys Asp Asn Thr Ser Phe His Ala Val Ile Phe Pro Ala Met Glu Ile
305                 310                 315                 320
Gly Gln Ser Leu Pro Tyr Lys Lys Val Asp Ala Leu Val Thr Ser Glu
                325                 330                 335
Phe Leu Leu Leu Glu Gly Phe Gln Phe Ser Lys Ser Asp Gly Asn Phe
            340                 345                 350
Ile Asp Met Asp Ala Phe Leu Glu Thr Tyr Ser Leu Asp Lys Leu Arg
        355                 360                 365
Tyr Val Leu Ala Ala Ile Ala Pro Glu Thr Ser Asp Ser Glu Phe Ser
    370                 375                 380
Phe Gln Glu Phe Lys Thr Arg Cys Asn Ser Glu Leu Val Gly Lys Tyr
385                 390                 395                 400
Gly Asn Phe Val Asn Arg Val Leu Ala Phe Ala Val Lys Asn Gly Cys
                405                 410                 415
Thr Glu Leu Ser Ser Pro Gln Leu Glu Gln Lys Asp Leu Asp Phe Ile
            420                 425                 430
Ser Lys Ser Gln Lys Leu Ala Lys Asp Ala Ala Glu His Tyr Ala Gln
        435                 440                 445
Tyr Ser Leu Arg Lys Ala Cys Ser Thr Ile Met Glu Leu Ala Ala Leu
    450                 455                 460
Gly Asn Gly Tyr Phe Asn Asp Glu Ala Pro Trp Lys Leu Ala Lys Glu
465                 470                 475                 480
Gly Asn Trp Asn Arg Val Arg Ala Ile Leu Phe Cys Ala Cys Tyr Cys
                485                 490                 495
Gln Lys Leu Leu Ala Leu Ile Ser Tyr Pro Ile Met Pro Glu Thr Ala
            500                 505                 510
Leu Lys Ile Leu Glu Met Ile Ala Pro Tyr Ser Leu Asp Leu Gly Ser
        515                 520                 525
```

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```
Gln Asp Pro Asp Arg Leu His Ser Leu Trp Thr Asp Ser Phe Phe Asp
    530                 535                 540
Tyr Ser Glu Glu Lys Phe Ser Leu Lys Glu Pro Glu Leu Leu Phe Thr
545                 550                 555                 560
Met Val Glu
```

<210>443
<211>101
<212>PRT
<213>Chlamydia trachomatis
<400>443

```
Val Met Ala Arg Lys Asp Arg Leu Thr Asn Glu Arg Leu Asn Lys Leu
  1               5                  10                  15
Phe Asp Ser Pro Phe Ser Leu Val Asn Tyr Val Ile Lys Gln Ala Lys
             20                  25                  30
Asn Lys Ile Ala Arg Gly Asp Val Arg Ser Ser Asn Val Ala Ile Glu
         35                  40                  45
Ala Leu Asn Phe Leu Asp Leu Tyr Gly Ile Gln Ser Glu Tyr Ala Glu
     50                  55                  60
Arg Asp Asp Arg Glu Arg His Leu Ser Ala Thr Gly Glu Arg Arg Arg
 65                  70                  75                  80
Glu Gln Gly Phe Gly Thr Ser Arg Arg Lys Asp Pro Ser Leu Tyr Asn
                 85                  90                  95
Trp Ser Asp Val Lys
            100
```

<210>444
<211>373
<212>PRT
<213>Chlamydia trachomatis
<400>444

```
Ala Cys Ile Leu Pro Arg Gly Lys Val Phe Leu Gly Ile Asp Asp Ser
  1               5                  10                  15
Lys Lys Leu Thr Pro Lys Gln Arg Arg Tyr Leu Tyr Glu Leu Leu Leu
             20                  25                  30
Glu Asp Pro Glu Val Asp Cys Gly Val Gly Val Ile Ser Val Glu Arg
         35                  40                  45
Ile Asp Glu Ile Asn Ile Leu Glu Ala Thr Lys Glu Ala Met Val Gln
     50                  55                  60
Ala Ile Ala Ser Leu Arg Ser Thr Pro Asp Phe Leu Leu Val Asp Gly
 65                  70                  75                  80
Leu Phe Leu Pro His Lys Ile Pro Ser Leu Lys Ile Ile Lys Gly Asp
                 85                  90                  95
Ala Arg Ser Val Ser Ile Ala Ala Ala Ser Ile Ile Ala Lys Glu Tyr
            100                 105                 110
Arg Asp Glu Leu Met Arg Lys Leu His Val Glu Tyr Pro Glu Tyr Gly
        115                 120                 125
Phe Asp Lys His Lys Gly Tyr Gly Thr Ala Ala His Leu Gln Ala Leu
    130                 135                 140
Lys His Phe Gly Pro Cys Val Tyr His Arg Lys Ser Phe Ser Pro Val
145                 150                 155                 160
Lys Glu Ser Ile Xaa Arg Gly Ser Met Ser Val Lys Val Ile Ser Pro
                165                 170                 175
Phe Ser Gln Asp Gly Val Gln Phe Phe Pro Lys Leu Phe Ile Ile Ser
            180                 185                 190
Ala Pro Ala Gly Ala Gly Lys Thr Thr Leu Thr His Met Leu Gln Arg
        195                 200                 205
Glu Phe Pro Asp Ala Phe Glu Lys Thr Val Ser Ser Thr Thr Arg Ser
    210                 215                 220
Ala Arg Pro Gly Glu Val His Gly Val Asp Tyr Leu Phe Val Ser Glu
225                 230                 235                 240
Asp Asp Phe Lys Gln Ser Leu Asp Arg Glu Asp Phe Leu Glu Trp Val
```

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```
                245                 250                 255
Phe Leu Phe Gly Thr Tyr Tyr Gly Thr Ser Lys Ala Glu Ile Ser Arg
            260                 265                 270
Val Leu Gln Lys Gly Lys His Cys Ile Ala Val Ile Asp Val Gln Gly
        275                 280                 285
Ala Leu Ala Leu Lys Lys Gln Met Pro Ala Val Thr Ile Phe Ile Gln
    290                 295                 300
Ala Pro Ser Gln Glu Glu Leu Glu Arg Arg Leu Asn Ala Arg Asp Ser
305                 310                 315                 320
Glu Lys Asp Phe Gln Lys Lys Glu Arg Leu Glu His Ser Ala Val Glu
                325                 330                 335
Ile Ala Ala Ala Ser Glu Phe Asp Tyr Val Val Val Asn Asp Asp Leu
            340                 345                 350
Ile Thr Ala Tyr Gln Val Leu Arg Ser Ile Phe Ile Ala Glu Glu His
        355                 360                 365
Arg Met Ser His Gly
    370
<210>445
<211>123
<212>PRT
<213>Chlamydia trachomatis
<400>445
Asn Thr Met Gly Asn Leu Ile Lys Glu Leu Gln Asp Glu Gln Cys Arg
  1               5                  10                  15
Thr Asp Leu Ala Asp Phe Cys Val Gly Asp Thr Ile Arg Val Ala Thr
             20                  25                  30
Asn Ile Ser Glu Gly Gly Lys Glu Arg Val Gln Val Phe Gln Gly Thr
         35                  40                  45
Val Met Ala Arg Lys Gly Gly Gly Ala Gly Glu Thr Val Ser Leu His
     50                  55                  60
Arg Val Ala Tyr Gly Glu Gly Met Glu Lys Ser Phe Leu Leu Asn Ser
 65                  70                  75                  80
Pro Lys Ile Val Ser Ile Glu Val Val Lys Arg Gly Lys Val Ser Arg
                 85                  90                  95
Ala Arg Leu Phe Tyr Leu Arg Gly Lys Thr Gly Lys Ala Ala Lys Val
            100                 105                 110
Lys Glu Leu Ile Gly Ser Arg Ala Ala Lys Lys
        115                 120
<210>446
<211>281
<212>PRT
<213>Chlamydia trachomatis
<400>446
Lys His Lys Lys Lys Glu Val Gln Gly His Ile Leu Ile Ser Ala Gly
  1               5                  10                  15
Gln Leu Leu Ser Ala Lys Lys Ser Arg Glu Leu Ala Ser Cys Ser His
             20                  25                  30
Leu Val Leu Leu Cys Gly His Tyr Glu Gly Ile Asp Glu Arg Ala Leu
         35                  40                  45
Thr Ala Glu Val Asp Glu Glu Ile Ser Ile Gly Asp Tyr Val Leu Thr
     50                  55                  60
Asn Gly Cys Ala Ala Ala Leu Val Leu Val Asp Ala Leu Ala Arg Phe
 65                  70                  75                  80
Ile Pro Gly Ile Leu Gly Asn Gln Glu Ser Ala Glu Tyr Asp Ser Leu
                 85                  90                  95
Glu Asn Gly Leu Leu Glu Gly Pro Gln Tyr Thr Arg Pro Arg Val Phe
            100                 105                 110
Glu Gly Glu Ser Val Pro Glu Val Leu Leu Cys Gly Asp His Gln Lys
        115                 120                 125
Ile Ala Asp Trp Arg Lys Gln Val Ser Leu Glu Arg Thr Arg Glu Arg
    130                 135                 140
```

```
Arg Pro Asp Leu Tyr Leu Gln Tyr Phe Tyr Gly Asn Ser Ala Cys Leu
145                 150                 155                 160
Ser Thr Gln Glu Asp Leu Pro Arg Ile Glu Val Val Ser Pro Lys Thr
                165                 170                 175
Phe Ser Val Val Leu Glu Val Gln Asp Leu Arg Lys Ala Lys Lys Phe
            180                 185                 190
Tyr Ser Arg Met Phe Gly Lys Glu Cys Trp Asp Gly Asp Lys Leu Phe
        195                 200                 205
Leu Leu Gly Lys Thr Ser Leu Tyr Leu Gln Gln Thr Lys Glu Thr Arg
    210                 215                 220
Gly Pro Thr Thr Val Phe Ile Glu Leu Glu Thr Asp His Asp Phe Val
225                 230                 235                 240
Arg Phe Leu Lys Arg Trp Glu Met Leu Gly Gly Glu Leu Gly Glu Gln
                245                 250                 255
Gly Thr Gly Gly Phe Pro Leu Arg Gln Val Phe Asp Leu Asp Gly His
            260                 265                 270
Ile Trp Val Val Ser Cys Val Gln Lys
        275                 280
<210>447
<211>118
<212>PRT
<213>Chlamydia trachomatis
<400>447
Met Glu Ile Asp Ile Leu Ser Leu Phe Pro Asp Tyr Phe Ala Ser Pro
  1                 5                  10                  15
Leu Gln Ala Thr Ile Leu Gly Arg Ala Ile Lys Gln Gly Ala Leu Ser
            20                  25                  30
Val Arg Ser Arg Asp Ile Arg Glu Phe Gly Leu Gly Lys Trp Lys Gln
        35                  40                  45
Val Asp Asp Ser Pro Tyr Asn Gly Glu Gly Met Leu Leu Met Ala Glu
    50                  55                  60
Pro Val Val Gln Ala Ile Arg Ser Ile Arg Arg Lys Lys Ser Lys Val
65                  70                  75                  80
Ile Tyr Leu Ser Pro Gln Asp Asn Phe Phe Pro Gln Arg Lys Val Val
                85                  90                  95
Asn Trp Arg Arg Val Arg Ile Trp Tyr Cys Tyr Val Asp Thr Met Arg
            100                 105                 110
Glu Leu Met Lys Gly Arg
        115
<210>448
<211>116
<212>PRT
<213>Chlamydia trachomatis
<400>448
Val Ala Leu Lys Ile Arg Leu Arg Gln Gln Gly Arg Lys Asn His Val
  1                 5                  10                  15
Val Tyr Arg Leu Val Leu Ala Asp Val Glu Ser Pro Arg Asp Gly Lys
            20                  25                  30
Tyr Ile Glu Leu Leu Gly Trp Tyr Asp Pro His Ser Glu Gln Asn Tyr
        35                  40                  45
Gln Leu Lys Ser Glu Arg Ile Phe Tyr Trp Leu Asn Gln Gly Ala Glu
    50                  55                  60
Leu Thr Glu Lys Ala Gly Ala Leu Val Lys Gln Gly Ala Pro Gly Val
65                  70                  75                  80
Tyr Ala Glu Leu Met Ala Lys Lys Val Ala Arg Arg Ala Val Val Arg
                85                  90                  95
Gln Lys Arg Arg Ala Tyr Arg Gln Arg Leu Ala Ala Arg Lys Ala Glu
            100                 105                 110
Ala Ala Ala Lys
        115
<210>449
```

<211>448
<212>PRT
<213>Chlamydia trachomatis
<400>449

```
Met Ile Ser Ser Leu Ser Gln Lys Leu Ser Asn Ile Phe Ser Ser Leu
  1               5                  10                  15
Phe Thr Ala Lys Arg Val Thr Glu Glu Gly Ile Ser Asp Ser Ile Arg
             20                  25                  30
Glu Val Arg Leu Ala Leu Leu Asp Ala Asp Val Asn Tyr Gln Ala Val
         35                  40                  45
Lys Asp Phe Ile Ala Lys Val Lys Gln Lys Val Val Gly Glu Glu Val
     50                  55                  60
Trp Lys His Val Ser Pro Gly Gln Gln Phe Ile Lys Cys Leu His Glu
 65                  70                  75                  80
Glu Leu Ser Ser Ser Leu Ala Ser Glu Gln Thr Ala Val Ser Leu Arg
                 85                  90                  95
Gly Cys Pro Ala Val Ile Leu Leu Cys Gly Leu Gln Gly Ala Gly Lys
            100                 105                 110
Thr Thr Thr Cys Ala Lys Leu Ala Asp Tyr Phe Leu Arg Glu Lys Lys
        115                 120                 125
Ala Lys Lys Val Leu Val Ala Ser Cys Asp Leu Lys Arg Phe Ser Ala
    130                 135                 140
Val Glu Gln Leu Glu Gly Leu Val Lys Gln Thr Gly Ala Asp Phe Phe
145                 150                 155                 160
Arg Arg Glu Gly Asn Asp Pro Val Asp Met Ala Ala Glu Ala Val Gln
                165                 170                 175
His Ala Lys Ser Gln Gly Tyr Asp Leu Val Leu Val Asp Thr Ala Gly
            180                 185                 190
Arg Leu His Val Asp Asp Ala Leu Met Asp Glu Leu Val Ala Ile Ala
        195                 200                 205
Arg Val Thr Ser Pro Cys Glu Thr Leu Phe Val Met Asn Leu Ala Met
    210                 215                 220
Gly Gln Asp Ala Val Val Thr Ala Lys Ala Phe Asp Glu Arg Leu Gly
225                 230                 235                 240
Leu Thr Gly Val Val Val Ser Met Ala Asp Gly Asp Ala Arg Ala Gly
                245                 250                 255
Ala Val Leu Ser Val Lys Ser Leu Leu Asn Lys Pro Ile Lys Phe Glu
            260                 265                 270
Gly Cys Gly Glu Lys Ile Lys Asp Leu Arg Pro Phe Asn Ala Gln Ser
        275                 280                 285
Met Ala Glu Arg Ile Leu Gly Met Gly Asp Thr Ile Ser Leu Val Asp
    290                 295                 300
Lys Met Arg Glu Cys Ile Ser Glu Glu Glu Asn Lys Glu Leu Glu Glu
305                 310                 315                 320
Lys Leu Thr Lys Ala Thr Phe Thr Tyr Glu Asp Phe His Lys Gln Ile
                325                 330                 335
Leu Ala Phe Arg Arg Leu Gly Pro Leu Arg Lys Ile Met Asn Met Met
            340                 345                 350
Pro Ser Phe Gly Gly Ala Lys Pro Ser Asp Lys Asp Leu Glu Glu Ser
        355                 360                 365
Glu Lys Gln Met Lys Arg Asn Glu Ala Ile Ile Leu Ser Met Thr Pro
    370                 375                 380
Glu Glu Arg Lys Glu Leu Val Glu Leu Ser Met Ser Arg Met Lys Arg
385                 390                 395                 400
Ile Ala Ala Gly Cys Gly Leu Thr Leu Gly Asp Val Asn Gln Phe Arg
                405                 410                 415
Lys Gln Met Met Gln Ser Lys Lys Phe Phe Lys Gly Met Thr Arg Glu
            420                 425                 430
Lys Met Glu Gln Met Gly Lys Lys Met Ser Gly Gly Asn Leu Trp Arg
        435                 440                 445
```

<210>450

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<211>290
<212>PRT
<213>Chlamydia trachomatis
<400>450

```
Met Lys Lys Leu Leu Arg Glu Ala Ser Glu Tyr Leu Leu Ser Arg Gly
  1               5                  10                  15
Ile Arg Phe Pro Gln Arg Glu Ala Glu Asp Ile Leu Met Asp Leu Leu
            20                  25                  30
Glu Ile Ser Ser Arg Ser Ala Leu His Gln Ala Lys Leu Ser Ser Glu
        35                  40                  45
Glu Gln Ser Leu Tyr Trp Lys Arg Leu Arg Lys Arg Gly Asp Arg Cys
    50                  55                  60
Pro Thr Ala Tyr Ile His Gly Lys Val His Phe Leu Gly Val Glu Leu
65                  70                  75                  80
Gln Val Thr Pro Gln Val Leu Ile Pro Arg Gln Glu Thr Glu Ile Phe
                85                  90                  95
Val Glu Gln Ile Ile Gly Tyr Leu Gln Met His Lys Glu Lys Thr Thr
            100                 105                 110
Phe Tyr Asp Val Cys Cys Gly Ser Gly Cys Ile Gly Leu Ala Val Arg
        115                 120                 125
Lys His Cys Pro His Val Arg Val Thr Leu Ser Asp Ile Ser Pro Glu
    130                 135                 140
Ala Leu Ala Ile Ala Glu Ser Asn Ala Arg Ser Asn Ala Leu Ala Val
145                 150                 155                 160
Asp Phe Leu Leu Gly Asp Leu Phe Asp Pro Phe Ser Phe Pro Ala Asp
                165                 170                 175
Val Leu Val Cys Asn Pro Pro Tyr Leu Ser Tyr Lys Glu Phe Phe Glu
            180                 185                 190
Ser Asp Pro Glu Val Arg Cys His Glu Pro Trp Lys Ala Leu Val Gly
        195                 200                 205
Gly Val Ser Gly Leu Glu Phe Tyr His Arg Ile Ala Thr His Ile His
    210                 215                 220
Lys Ile Leu Val Ser Gly Gly Val Gly Trp Leu Glu Ile Gly Ser Thr
225                 230                 235                 240
Gln Gly Glu Asp Val Lys Gln Ile Phe His Ala Lys Gly Ile Arg Gly
                245                 250                 255
Arg Val Leu Lys Asp Tyr Ala Gln Leu Asp Arg Phe Phe Phe Leu Xaa
            260                 265                 270
Asn Gln Ala Asn Asp Ala Val Ser Ser Gly Glu Val Ser Gly Phe Ser
        275                 280                 285
Glu Arg
    290
```

<210>451
<211>232
<212>PRT
<213>Chlamydia trachomatis
<400>451

```
Gly Xaa Cys Val Arg Met Tyr His Leu Tyr Ala Ala Ser Lys Gly Trp
  1               5                  10                  15
Gln Cys Glu Val Leu Ser Ala Ser Glu Ser Asp Leu Gly Gly Tyr Lys
            20                  25                  30
Glu Tyr Val Met Gly Ile Ser Gly Ala Ser Val Lys Arg Phe Leu Gln
        35                  40                  45
Tyr Glu Ala Gly Thr His Arg Val Gln Arg Val Pro Glu Thr Glu Thr
    50                  55                  60
Gln Gly Arg Val His Thr Ser Ala Val Thr Val Ala Val Leu Pro Glu
65                  70                  75                  80
Pro Ala Glu Asp Asp Glu Glu Val Phe Ile Asp Glu Lys Asp Leu Arg
                85                  90                  95
Ile Asp Thr Phe Arg Ser Ser Gly Ala Gly Gly Gln His Val Asn Val
            100                 105                 110
```

Thr Asp Ser Ala Val Arg Ile Thr His Ile Pro Ser Gly Val Val Val
115 120 125
Thr Cys Gln Asp Glu Arg Ser Gln His Lys Asn Lys Ala Lys Ala Met
130 135 140
Arg Val Leu Lys Ala Arg Ile Arg Asp Ala Glu Val Gln Lys Arg Ala
145 150 155 160
Gln Glu Ala Ser Ala Met Arg Ser Ala Gln Val Gly Ser Gly Asp Arg
165 170 175
Ser Glu Arg Ile Arg Thr Tyr Asn Phe Pro Gln Asn Arg Val Thr Asp
180 185 190
His Arg Ile Gly Leu Thr Leu Tyr Asn Leu Asp Arg Val Met Glu Gly
195 200 205
Glu Leu Asp Met Ile Thr Thr Ala Leu Val Thr His Val His Arg Gln
210 215 220
Leu Phe Gly His Glu Glu Thr Ala
225 230

<210>452
<211>628
<212>PRT
<213>Chlamydia trachomatis
<400>452

Met Thr Ser Ser Tyr Met Ser Arg Leu Tyr Ser Leu Asn Lys Ser Arg
1 5 10 15
Arg Ile Leu His Ser Ser Phe Arg Leu Leu Lys Ser Thr Lys Met Leu
20 25 30
Ser His Pro Glu Thr Gln Lys Glu Leu Gln Glu Val Leu Lys Gln Leu
35 40 45
Glu Glu Ala Ile Leu Asp Gln Asn Arg Glu Asp Ala Ser Leu Phe Ala
50 55 60
Lys Gln Ala Gln Ala Ile Gln Lys Arg Phe Pro Lys Ser Lys Leu Arg
65 70 75 80
Ala Thr Phe Asp Leu Ile Tyr Ala Leu Thr Phe Ala Ala Ile Leu Ala
85 90 95
Phe Leu Ile Arg Gln Phe Trp Phe Glu Leu Tyr Glu Val Pro Thr Gly
100 105 110
Ser Met Arg Pro Thr Ile Leu Glu Gln Asp Arg Ile Leu Val Ser Lys
115 120 125
Thr Thr Phe Gly Leu Arg Leu Pro Phe Ser Asn Arg Ser Ile Gly Tyr
130 135 140
Thr Pro Glu Ala Ile Thr Arg Gly Glu Leu Val Val Phe Thr Val Gly
145 150 155 160
Asp Leu Pro Ile Pro Asn Ala Asp Thr Lys Tyr Phe Gly Ile Ile Pro
165 170 175
Gly Lys Lys Arg Tyr Ile Lys Arg Cys Met Gly Lys Pro Gly Asp Thr
180 185 190
Val Tyr Phe Tyr Gly Gly Lys Ile Tyr Gly Ile Asp Cys Asp Gly Glu
195 200 205
Pro Ile Phe Pro Gln Asn Thr Glu Asn Leu Tyr His Val Pro Tyr Ile
210 215 220
Ser Phe Asp Gly Thr Pro Glu Ile Leu Thr His Ser Glu Glu Gln Thr
225 230 235 240
Asp Val Ile Phe Asn Gln Phe His Thr Pro Cys Gly Lys Ile Ser Leu
245 250 255
Pro Gln Gln Ala Ser Tyr Gly Gln Phe Phe Tyr Lys Asn Ala Trp His
260 265 270
Asn Asp Thr Pro Tyr Ala Leu Lys Asp Pro His Asn Glu Pro Val Ser
275 280 285
Tyr Ala Asp Leu Phe Gly Ile Lys Asn Phe Ala Met Val Arg Ile Leu
290 295 300
Thr Lys Lys Gln Ala Ala Leu Thr His Val Leu Pro Ser Pro Leu Ser
305 310 315 320

Asp Thr Tyr Leu Glu Ile Ala His Thr Pro Asn Val Ser Tyr Pro His
325 330 335
Pro His Leu Arg Pro Phe Glu Thr Gln Arg Ile Pro Thr Ile Glu Pro
340 345 350
Met Lys Thr Leu Leu Pro Leu Arg Lys Glu His Ile His Leu Ile Arg
355 360 365
Asn Asn Leu Thr Thr Ser Arg Phe Thr Val Val Asp Gly Tyr Ala Tyr
370 375 380
Lys Tyr Gln Pro Ala Pro Met Asn Thr Ser Gly Met Val Arg Met Phe
385 390 395 400
Ala Leu Pro Met Pro Asn Ile Pro Asp Gly Cys Tyr Glu Phe Ser Lys
405 410 415
Gly Asp Val Phe Lys Ile Asn Met Gly Gly Phe Arg Thr Lys Leu Lys
420 425 430
Gln Pro His Pro Leu Thr Gln Leu Ser Asn Ser Gln Val Ile Asp Leu
435 440 445
Phe Asn Cys Gly Ile Ser Phe His Thr Ile Tyr Ile Pro Lys Asn Pro
450 455 460
Gln Tyr Ala Pro Phe Pro Asn Arg Tyr Ala Phe Phe Asn Gln Gly Asn
465 470 475 480
Leu Phe Val Met Asp Ser Pro Val Phe Ile Asp Ser Asp Pro Ala Leu
485 490 495
Gln Lys Phe Ile Val Ser Glu Glu Glu Lys Glu Leu Gln Ser Ser Glu
500 505 510
Asp Lys Pro Tyr Ile Ala Phe Ile Asp Arg Gly Pro Pro Pro Glu Ser
515 520 525
Thr Glu Glu Phe Val Ser Phe Ile Thr Asn Phe Gly Leu Lys Ile Pro
530 535 540
Glu Gly His Val Leu Val Leu Gly Asp Asn Cys Pro Met Ser Ala Asp
545 550 555 560
Ser Arg Asp Phe Gly Phe Val Pro Val Glu Asn Leu Leu Gly Ser Pro
565 570 575
Val Gly Ile Phe Trp Pro Ile Asn Arg Leu Gly Leu Leu Ser Ser Asn
580 585 590
Ile Thr Pro Leu Ser Leu Pro Gly Tyr Leu Val Asn Gly Leu Ala Leu
595 600 605
Gly Ala Phe Leu Tyr Cys Ile Gly Leu Trp Tyr Tyr Arg Lys Asn His
610 615 620
Arg Leu Phe Pro
625

<210>453
<211>539
<212>PRT
<213>Chlamydia trachomatis
<400>453
Lys Leu Thr Arg Thr Gly Asn Leu Ser Glu Glu Ser Leu Met Phe Ser
1 5 10 15
Ile Val Gly Leu Ile Leu Glu Leu Cys His Met Leu Arg Ile Ile Thr
20 25 30
Leu Leu Lys Glu Gln Lys Lys Arg Arg Leu Cys Phe Pro Ala Asp Phe
35 40 45
Ile Ala Glu Gly Leu Asp Gln Thr Arg Gly Trp Phe Tyr Thr Leu Thr
50 55 60
Val Ile Ala Ala Ala Leu Phe Asp Gln Pro Ala Phe Lys Asn Val Ile
65 70 75 80
Val Asn Gly Ile Ile Leu Ala Glu Asp Gly Asn Lys Met Ser Lys Arg
85 90 95
Leu Asn Asn Tyr Pro Ser Pro Lys Met Ile Met Asp Ala Tyr Gly Ala
100 105 110
Asp Ala Leu Arg Leu Tyr Leu Leu Asn Ser Val Val Val Lys Ala Glu
115 120 125

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Asp Leu Arg Phe Ser Asp Lys Gly Val Glu Ser Val Leu Lys Gln Val
    130                 135                 140
Leu Leu Pro Leu Ser Asn Ala Leu Ala Phe Tyr Asn Thr Tyr Ala Glu
145                 150                 155                 160
Leu Tyr Gly Phe Asp Pro Lys Glu Thr Asp Asn Ile Glu Leu Ala Glu
                165                 170                 175
Ile Asp Arg Trp Ile Leu Ser Ser Leu Tyr Ser Leu Leu Gly Lys Thr
            180                 185                 190
Arg Glu Ser Met Ser Gln Tyr Asp Leu His Ala Ala Val Asn Pro Phe
        195                 200                 205
Val Asp Phe Ile Glu Asp Leu Thr Asn Trp Tyr Ile Arg Arg Ser Arg
    210                 215                 220
Arg Arg Phe Trp Asp Ala Glu Asp Ser Thr Asp Arg Arg Ala Ala Phe
225                 230                 235                 240
Ser Thr Leu Tyr Glu Val Leu Val Val Phe Ser Lys Val Ile Ala Pro
                245                 250                 255
Phe Ile Pro Phe Ile Ser Glu Asp Met Tyr Gln Gln Leu Arg Gly Glu
            260                 265                 270
Thr Asp Pro Glu Ser Val His Leu Cys Asp Phe Pro His Val Val Leu
        275                 280                 285
Glu Lys Ile Leu Pro Asn Leu Glu Arg Lys Met Gln Asp Ile Arg Glu
    290                 295                 300
Ile Val Ala Leu Gly His Ser Leu Arg Lys Glu His Lys Leu Lys Val
305                 310                 315                 320
Arg Gln Pro Leu Gln Asn Val Tyr Ile Val Gly Ser Gln Glu Arg Met
                325                 330                 335
Glu Ala Leu Ser Gln Val Gly Ser Leu Ile Gly Glu Glu Leu Asn Val
            340                 345                 350
Lys Asp Val His Phe Cys Ser Glu Thr Pro Glu Tyr Val Thr Thr Leu
        355                 360                 365
Ile Lys Pro Asn Phe Arg Thr Leu Gly Lys Lys Val Gly Asn Arg Leu
    370                 375                 380
Pro Glu Ile Gln Arg Ala Leu Ala Gly Leu Pro Gln Glu Gln Ile Gln
385                 390                 395                 400
Ala Phe Met His Lys Gly Gln Met Val Val Ser Leu Gly Glu Glu Thr
                405                 410                 415
Ile Ser Leu Asp Lys Glu Asp Ile Thr Val Ser Trp Ala Ser Ala Glu
            420                 425                 430
Gly Phe Val Ala Arg Ser Ser Ala Ser Phe Val Ala Val Leu Asp Cys
        435                 440                 445
Gln Leu Thr Glu Pro Leu Ile Met Glu Gly Ile Ala Arg Glu Leu Val
    450                 455                 460
Asn Lys Ile Asn Thr Met Arg Arg Asn Gly Lys Leu His Val Ser Asp
465                 470                 475                 480
Arg Ile Ala Ile Arg Leu His Ala Pro Val Ile Val Gln Glu Ala Phe
                485                 490                 495
Ala Leu His Lys Glu Tyr Ile Cys Glu Glu Thr Leu Thr Thr Ser Val
            500                 505                 510
Ser Val Ile Asp Tyr Lys Glu Gly Glu Glu Trp Asp Ile Asn Gly His
        515                 520                 525
Ala Val Ser Phe Val Leu Glu Arg Val Glu Arg
    530                 535
<210>454
<211>548
<212>PRT
<213>Chlamydia trachomatis
<400>454
Val Asn Asn Gln Arg Met Asp Asn Glu Asp Lys Ile Ser Ile Ser Ala
  1               5                  10                  15
Lys Glu Glu Lys Ile Leu Ser Phe Trp Lys Glu Gln Asp Ile Phe Gln
            20                  25                  30
```

```
Lys Thr Leu Asp Asn Arg Glu Gly Cys Pro Thr Phe Ser Phe Tyr Asp
         35                  40                  45
Gly Pro Pro Phe Ala Thr Gly Leu Pro His Tyr Gly His Leu Leu Ala
     50                  55                  60
Gly Thr Ile Lys Asp Val Val Cys Arg Tyr Ala Ser Met Asp Gly His
 65                  70                  75                  80
Tyr Val Pro Arg Arg Phe Gly Trp Asp Cys His Gly Val Pro Val Glu
                 85                  90                  95
Tyr Glu Val Glu Lys Ser Leu Gly Leu Thr Glu Pro Gly Ala Ile Glu
            100                 105                 110
Arg Phe Gly Val Ala Asn Phe Asn Glu Glu Cys Arg Lys Ile Val Phe
        115                 120                 125
Arg Tyr Ala Asp Glu Trp Lys Tyr Phe Val Asp Arg Ile Gly Arg Trp
    130                 135                 140
Val Asp Phe Ser Ala Thr Trp Arg Thr Met Asp Leu Ser Phe Met Glu
145                 150                 155                 160
Ser Val Trp Trp Val Phe Arg Ser Leu Tyr Asp Gln Gly Leu Val Tyr
                165                 170                 175
Glu Gly Thr Lys Val Val Pro Phe Ser Thr Lys Leu Gly Thr Pro Leu
            180                 185                 190
Ser Asn Phe Glu Ala Gly Gln Asn Tyr Lys Glu Val Asp Asp Pro Ser
        195                 200                 205
Val Val Val Lys Phe Ala Leu Gln Asp Asn Gln Gly Phe Leu Leu Ala
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Trp Thr Thr Thr Pro Trp Thr Leu Val Ser Asn Met Ala Leu Ala Val
225                 230                 235                 240
His Pro Glu Leu Thr Tyr Val Arg Ile Lys Asp Lys Glu Ser Gly Asp
                245                 250                 255
Glu Tyr Ile Leu Gly Gln Glu Ser Leu Pro Arg Trp Phe Pro Asp Arg
            260                 265                 270
Glu Ser Tyr Glu Trp Ile Gly Gln Leu Ser Gly Lys Ser Leu Val Gly
        275                 280                 285
Gln Ser Tyr Glu Pro Leu Phe Pro Tyr Phe Gln Asp Lys Lys Glu Leu
    290                 295                 300
Gly Ala Phe Arg Ile Leu Pro Ala Asp Phe Ile Glu Glu Ser Glu Gly
305                 310                 315                 320
Thr Gly Ile Val His Met Ala Pro Ala Phe Gly Glu Ala Asp Phe Phe
                325                 330                 335
Ala Cys Gln Glu His Asn Val Pro Leu Val Cys Pro Val Asp Asn Gln
            340                 345                 350
Gly Cys Tyr Thr Ala Glu Val Lys Asp Phe Val Gly Glu Tyr Ile Lys
        355                 360                 365
Ser Ala Asp Lys Gly Ile Ala Arg Arg Leu Lys Asn Glu Asn Lys Leu
    370                 375                 380
Phe Tyr Gln Gly Thr Val Arg His Arg Tyr Pro Phe Cys Trp Arg Thr
385                 390                 395                 400
Asp Ser Pro Leu Ile Tyr Lys Ala Val Asn Ser Trp Phe Val Ala Val
                405                 410                 415
Glu Lys Val Lys Ser Lys Met Leu Lys Ala Asn Glu Ser Ile His Trp
            420                 425                 430
Thr Pro Gly His Ile Lys Gln Gly Arg Phe Gly Lys Trp Leu Glu Gly
        435                 440                 445
Ala Arg Asp Trp Ala Ile Ser Arg Asn Arg Tyr Trp Gly Thr Pro Ile
    450                 455                 460
Pro Ile Trp Arg Ser Asp Asp Gly Glu Leu Leu Val Ile Gly Ser Ile
465                 470                 475                 480
Gln Glu Leu Glu Ala Leu Ser Gly Gln Lys Ile Val Asp Leu His Arg
                485                 490                 495
His Phe Ile Asp Glu Ile Glu Ile Asn Gln Asn Gly Lys Ser Phe Arg
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Arg Ile Pro Tyr Val Phe Asp Cys Trp Phe Asp Ser Gly Ala Met Pro
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             20                  25                  30
Trp Asp Cys Leu Gln His Asn Tyr Leu Arg Arg Asn Ala Leu Thr Ser
         35                  40                  45
Phe Cys Ser Tyr Val Pro Ile Leu Ser Thr Val Val Gly Ile Arg Thr
     50                  55                  60
Leu Tyr Asn Met Arg Lys Leu His Gln Ala Phe Val Arg Arg Thr Gly
 65                  70                  75                  80
Gly Phe Leu Cys Gln Asn Asp Pro Asn Ile Pro Cys Asn Lys Phe Pro
                 85                  90                  95
Cys Ser Ile Ile Arg Lys Glu Trp Pro Gln Val His Thr Lys Ala Met
            100                 105                 110
Gln Glu Val Phe Gly Ile Lys Ala Leu Val Cys Leu Gly Ser Leu Ile
        115                 120                 125
Leu Lys Ile Phe Arg Ala Val Lys Ala Phe Phe His Arg Thr Phe Ser
    130                 135                 140
Pro Ser Leu Leu Pro Glu Gln Asp Ala Ser Ile Gln Leu Pro Asp Ser
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Pro Gln Ser Gly Ile Pro Glu Glu Thr Leu Ser Glu Thr Pro Arg Ser
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Ser

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             20                  25                  30
His Tyr Ile Arg Lys Lys Gly Phe Val Lys Ala Ser Pro Val Ile Glu
         35                  40                  45
Gly Arg Glu Ser Phe Glu Arg Ser Leu Phe Ala Val Trp Val Ser Leu
     50                  55                  60
Gln Pro Glu Glu Ile Arg His Gln Leu Thr Met Glu Ser Phe Tyr Arg
 65                  70                  75                  80
Asp Glu Gln Lys Lys Lys Arg Val Leu Thr Gly Glu Leu Glu Val Tyr
                 85                  90                  95
Pro His Ile Val Lys Asn Asn Pro Gly Asp Tyr Leu Leu Lys Asn Gly
            100                 105                 110
Glu Asp Val Val Ala Phe Val Tyr Ala Thr Ser Ile Asp Leu Ser Lys
        115                 120                 125
Trp Leu Gly Lys Pro Val Val Leu Glu Cys Val Ser Arg Pro Asn Asn
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His Phe Ala Phe Pro Ala Tyr Ile Val Leu Ser Val Lys Glu Gly Ala
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35 40 45
Ile Ser Met Leu Ile Phe Ala Leu Ser Cys Gly Ala Asp Ala Cys Leu
50 55 60
Cys Ala Ala Asp Leu Ser Lys Ala Lys Val Glu Ala Ser Val Gly Asp
65 70 75 80
Arg Ala Ala Phe Ser Pro Phe Thr Gly Glu Ile Lys Gly Asn Arg Val
85 90 95
Arg Leu Arg Leu Ala Pro His Thr Asp Ser Phe Ile Ile Lys Glu Leu
100 105 110
Ser Lys Gly Asp Cys Leu Ala Val Leu Gly Glu Ser Lys Asp Tyr Tyr
115 120 125
Val Val Ala Ala Pro Glu Gly Val Arg Gly Tyr Val Phe Arg Thr Phe
130 135 140
Val Leu Asp Asn Val Ile Glu Gly Glu Lys Val Asn Val Arg Leu Glu
145 150 155 160
Pro Ser Thr Ser Ala Pro Ile Leu Ala Arg Leu Ser Lys Gly Thr Val
165 170 175
Val Lys Thr Leu Gly Ala Ala Gln Gly Lys Trp Ile Glu Ile Ala Leu
180 185 190
Pro Lys Gln Cys Val Phe Tyr Val Ala Lys Asn Phe Val Lys Asn Val
195 200 205
Gly Ala Leu Asp Leu Tyr Asn Gln Lys Glu Gly Gln Lys Lys Leu Ala
210 215 220
Leu Asp Leu Leu Ser Ser Ala Met Asp Phe Ala Asp Ala Glu Leu Gln
225 230 235 240
Lys Lys Ile Glu Asp Ile Asp Leu Asp Ala Ile Tyr Lys Lys Met Asn
245 250 255
Leu Ala Gln Ser Glu Glu Phe Lys Asp Val Pro Gly Leu Gln Ser Leu
260 265 270
Val Gln Lys Ala Leu Glu Arg Phe Gln Glu Ala Phe Leu Ala Lys Ser
275 280 285
Leu Glu Lys Ser Ala Val Lys Val Pro Gly Ile Gln His Lys Val Leu
290 295 300
Glu Xaa Ile Ala Val Val Ser Pro Ala Val Glu Glu Thr Pro Val Val
305 310 315 320
Thr Lys Ile Glu Glu Gln Lys Val Thr Thr Val Pro Val Pro Ala Pro
325 330 335
Ser Cys Cys Tyr Arg Ala Gly Ser Arg Phe Lys Leu Cys Gln Arg Phe
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Phe Ile Ile Ala Leu Tyr Pro
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20 25 30
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35 40 45
Phe Ser Gln Lys Gly Leu Val Ser Met Leu Leu Gly Gly Ala Gly Ser

50 55 60
Ile Asn Met Leu Leu Gln His Ser Pro Glu His Lys Asp His Pro Asp
65 70 75 80
Leu Pro Thr Asp Leu Leu Glu Arg Ile Ala Gln Met Met Arg Ser Leu
85 90 95
Ser Ile Gly Pro Thr Ser Ile Leu Ala Lys Pro Glu Pro His Cys Asn
100 105 110
Cys Leu His Cys Gln Ile Gly Arg Ala Thr Val Glu Glu Glu Asp Ala
115 120 125
Gly Val Ser Asp Glu Asp Leu Thr Xaa Arg Ser Trp Asp Ile Ser Gln
130 135 140
Ser Gly Glu Lys Met Tyr Thr Val Thr Asp Pro Leu Asn Pro Glu Glu
145 150 155 160
Gln Phe Asn Val Tyr Leu Xaa Thr Pro Ile Gly Cys Thr Cys Gly Gln
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Pro Tyr Cys Glu His Val Lys Ala Val Leu Tyr Thr
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<213>Chlamydia trachomatis
<400>459
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20 25 30
Val Ile Glu Glu Leu Glu Ser Cys Ala Lys Phe Arg Asp Glu Ser Gly
35 40 45
Lys Asn Ala Ser Arg Ala Leu Ser Asn Ile Arg Leu Leu Leu Glu Gln
50 55 60
Ser Glu Arg Pro Ser Ser Gly Gln Ile Leu Leu Lys Asn Gly Ser Glu
65 70 75 80
Leu Cys Ile Glu Val Ser Pro Leu Val Asn Leu Ser Asn His Glu Lys
85 90 95
Gln Lys Lys His Leu Thr Leu Glu Leu Leu Gln Ile Ile Ser Gln Arg
100 105 110
Glu Pro Val Val Phe Val Thr Lys Ser Leu Gly Arg Arg Val His Ala
115 120 125
Glu Ala Leu Gly Ile Glu Ala Lys Asp Tyr Glu Asn Lys Cys Val Ser
130 135 140
Phe Arg Ser Leu Tyr Arg Gly His Arg Lys Leu Lys Val Ala Asn Ser
145 150 155 160
Thr Ile Glu Tyr Phe Tyr Lys Asp Gly Ser Ile Ala Phe Pro Ser Asp
165 170 175
Leu Ser Pro Leu Pro Ser Pro Asn Glu Tyr Phe Phe Leu Ser Gly Asp
180 185 190
Ser Asp Asn Tyr Ser Ala Val Gly Arg Tyr Ser Ser Lys Asp Asn Lys
195 200 205
Ile Leu Ser Leu Lys Pro Ala Pro Glu Lys Ile Trp Gly Val Lys Pro
210 215 220
Leu Asn Ile Glu Gln Arg Cys Ala Leu Asp Leu Leu Leu Arg Asp Asp
225 230 235 240
Ile Lys Leu Val Thr Leu Met Gly Gln Ala Gly Ser Gly Lys Thr Ile
245 250 255
Leu Ala Leu Ala Ala Ala Met Tyr Gln Val Phe Glu Lys Pro Lys Tyr
260 265 270
Asn Lys Leu Leu Val Ser Arg Pro Ile Ile Pro Met Gly Lys Asp Ile
275 280 285
Gly Phe Leu Pro Gly Ile Lys Glu Ala Lys Leu Met His Trp Met Gln
290 295 300
Pro Ile Tyr Asp Asn Met Glu Phe Leu Phe Asp Val Asn Asn Met Gly

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305                 310                 315                 320
Asp Phe Ser Glu Thr Leu His Ser Leu Met Glu Thr Lys Lys Leu Glu
                325                 330                 335
Met Glu Ala Leu Thr Tyr Ile Arg Gly Arg Ser Leu Pro Lys Val Phe
            340                 345                 350
Met Ile Ile Asp Glu Ala Gln Asn Leu Thr Pro His Glu Ile Lys Thr
        355                 360                 365
Ile Ile Ser Arg Ala Gly Lys Gly Thr Lys Ile Val Leu Thr Gly Asp
    370                 375                 380
Pro Thr Gln Ile Asp Ser Leu Tyr Phe Asp Glu Asn Ser Asn Gly Leu
385                 390                 395                 400
Thr Tyr Leu Val Gly Lys Phe His His Leu Pro Leu Tyr Gly His Met
                405                 410                 415
Phe Met Thr Arg Thr Glu Arg Ser Glu Leu Ala Ala Ala Ala Ala Thr
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Ile Leu
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Leu Ile Ala Thr Ile Leu Gly Met Pro Gln Thr Leu Gly Val Cys Cys
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Arg Ile Glu Gly Ala Pro Gly Met Pro Ala Tyr Pro Leu Ile Ile Leu
         35                  40                  45
Leu Ser Val Val Thr Leu Ser Cys Cys Tyr Ala Glu Lys Arg Ala Val
     50                  55                  60
Ser Ile Gly Lys Tyr Gly Lys Ala Phe Val Leu Ser Cys Ile Asn Leu
 65                  70                  75                  80
Leu Ser Pro Ile Leu Ala Tyr Asn Ile Leu Leu Phe Pro Asn Leu Leu
                85                  90                  95
Val Ser Thr Val Asp Asn Arg Tyr Thr Met Thr Val Phe Asn Ala Ala
            100                 105                 110
Ala Glu Thr Arg Thr Leu Gln His Leu Val Thr Ile Val Leu Ile Gly
        115                 120                 125
Leu Pro Phe Val Val Ala Tyr Ala Ile Tyr Ile Tyr Arg Val Phe Arg
    130                 135                 140
Gly Lys Thr Asp Phe Pro Ser Ile Tyr
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<213>Chlamydia trachomatis
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             20                  25                  30
Asp Gly Phe Asp Leu Gly Leu Ser Thr Ile Tyr Phe Leu Ser Lys Asp
         35                  40                  45
Glu Lys Glu Arg Arg Leu Leu Leu Asn Ser Ile Gly Pro Val Trp Asp
     50                  55                  60
Gly Asn Glu Val Trp Phe Val Ile Met Phe Ala Gly Leu Phe Ala Gly
 65                  70                  75                  80
Phe Pro Thr Ala Tyr Gly Thr Leu Leu Ser Ile Phe Tyr Met Pro Ile
                85                  90                  95
Trp Xaa Met Val Met Leu Tyr Ile Phe Arg Gly Cys Ser Leu Glu Phe
            100                 105                 110
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Arg Ser Lys Ala Glu Ser Asn Arg Trp Lys Leu Phe Trp Asp Val Leu
        115                 120                 125
Phe Ser Ile Ser Gly Met Ser Ile Ser Phe Phe Leu Gly Thr Leu Ala
    130                 135                 140
Gly Asn Leu Leu Val Gly Phe Pro Ile Ala Pro Asp Thr Ser Tyr Ser
145                 150                 155                 160
Ser Leu Ser Trp Lys Leu Phe Phe Arg Pro Tyr Gln Val Leu Cys Gly
                165                 170                 175
Leu Phe Val Val Ala Ala Phe Ala Leu His Gly Ile Ser Phe Ala Leu
            180                 185                 190
Met Lys Thr Thr Glu Gly Leu His Glu Arg Leu Lys Asn Lys Phe Ser
        195                 200                 205
Phe Met Phe Cys Leu Val Thr Trp Phe Cys Ile Phe Pro Cys Ser Leu
    210                 215                 220
Arg Leu Phe
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<213>Chlamydia trachomatis
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Phe His Tyr Leu Phe Val Pro Ile Ser Leu Gly Leu Ser Ile Met Ile
            20                  25                  30
Val Leu Met Glu Gly Leu Tyr Leu Phe Thr Lys Lys Ser Ile Tyr Lys
        35                  40                  45
Gln Leu Thr Trp Phe Trp Ile Lys Ile Phe Thr Leu Thr Phe Val Val
    50                  55                  60
Gly Val Val Thr Gly Leu Met Gln Ile Phe Ser Phe Gly Ala Asn Trp
65                  70                  75                  80
Ser Arg Phe Ala Glu Tyr Thr Gly Asn Val Phe Gly Met Phe Leu Gly
                85                  90                  95
Ser Glu Gly Met Phe Ala Phe Phe Leu Glu Ser Gly Phe Leu Gly Val
            100                 105                 110
Leu Leu Phe Gly Arg Tyr Lys Val Ser Lys Lys Met His Phe Phe Ser
        115                 120                 125
Ala Cys Met Val Ala Leu Gly Ala His Met Ser Ala Phe Trp Ile Val
    130                 135                 140
Cys Ala Asn Ser Trp Met Gln Thr Pro Ser Gly Tyr Glu Met Val Met
145                 150                 155                 160
Arg Asn Gly Met Leu Val Pro Gln Met Thr Ser Phe Trp Ala Ala Val
                165                 170                 175
Leu Ser Pro Ser Ala Leu Gln Arg Phe Thr His Val Val Leu Gly Ala
            180                 185                 190
Trp Leu Ser Gly Ile Phe Leu Val Leu Ser Val Ser Ala His Tyr Leu
        195                 200                 205
Arg Lys Glu Arg His Lys Asp Phe Ala Asn Gln Gly Leu Lys Ile Ser
    210                 215                 220
Met Phe Cys Ala Phe Leu Val Leu Ala Leu Gln Leu Trp Ser Ala Asp
225                 230                 235                 240
Val Thr Ala Arg Gly Val Ala Lys His Gln Pro Ala Lys Leu Ala Ala
                245                 250                 255
Phe Glu Gly Val Phe Lys Thr Gln Glu His Thr Pro Ile Tyr Leu Leu
            260                 265                 270
Gly Ile Val Asp Met Lys Lys Glu Arg Val Ile Gly Ile Pro Ile Pro
        275                 280                 285
Ser Gly Leu Ser Leu Leu Val His Arg Asn Ala Lys Thr Pro Val Thr
    290                 295                 300
Gly Leu Asp Gln Phe Pro Lys Asp Glu Trp Pro Asn Val Ala Phe Val
305                 310                 315                 320
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Phe Gln Thr Tyr His Leu Met Val Met Leu Trp Gly Val Met Val Leu
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Leu Ala Leu Ile Ala Phe Ala Val Tyr Lys Lys Lys Ser Trp Ser Cys
340 345 350
Lys Lys Gly Ile Leu Trp Ile Leu Ser Leu Ser Val Leu Phe Pro Glu
355 360 365
Leu Cys Asn Glu Ile Gly Trp Ile Ser Thr Glu Val Gly Arg Gln Pro
370 375 380
Trp Val Val Tyr Gly Leu Leu Lys Thr Lys Asp Ala Thr Ser Pro Ile
385 390 395 400
Val Asn Ala Gly Gln Ile Trp Gln Ser Leu Ile Leu Phe Ser Ile Ile
405 410 415
Phe Ile Cys Leu Leu Ser Val Phe Val Ser Leu Leu Leu Lys Lys Ile
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Gly Glu Gly Pro Asp Glu Gln Asp Leu Ile Glu Val Asp Leu
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<213>Chlamydia trachomatis
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20 25 30
Gly Ala Met Asp Leu Val Phe Gly Leu Leu Ser Phe Leu Cys Leu Phe
35 40 45
Val Leu Ala Glu Lys Leu His Leu Pro Val Ile Arg Asn Leu Met Leu
50 55 60
His Val Val Asn Ile Ala Ala Ile Val Val Phe Ile Ile Phe Gln Pro
65 70 75 80
Glu Ile Arg Leu Ala Leu Ser Arg Ile Arg Leu Arg Arg Gly Lys Phe
85 90 95
Val Ile Asn Met Gln Asp Glu Phe Ile Asp His Leu Thr Ala Cys Ile
100 105 110
Tyr Arg Met Ala Glu Arg Gln Ile Gly Ala Leu Ile Val Leu Glu Asn
115 120 125
Glu Arg Leu Leu Asn Asp Leu Leu Asn Leu Ser Ala Val Lys Ile Asn
130 135 140
Ala Asp Phe Ser Glu Glu Leu Leu Glu Ala Ile Phe Glu Pro Ser Ser
145 150 155 160
His Leu His Asp Gly Ala Val Leu Met Arg Gly Glu Thr Ile Ser Tyr
165 170 175
Ala Arg Val Ile Leu Pro Leu Ala His Asp Thr Thr Gln Leu Ser Arg
180 185 190
Ser Met Gly Thr Arg His Arg Ala Ala Leu Gly Ala Ser Gln Arg Thr
195 200 205
Asp Ala Leu Val Ile Val Val Ser Glu Glu Thr Gly Ala Val Ser Leu
210 215 220
Ala Arg Asp Gly Ile Leu Thr Arg Gly Val Lys Met Asp Arg Phe Lys
225 230 235 240
Ala Ile Leu Arg Ser Ile Leu Thr Arg Asn Glu Arg Lys Thr Asn Pro
245 250 255
Ile Ile Ser Trp Met Arg Lys Lys
260

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<213>Chlamydia trachomatis
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            20                  25                  30
Glu Gln Thr Val Ile Gly Leu Gln Ala Asn Gly Leu Leu Lys Lys Lys
        35                  40                  45
Val Ala Met Met Ile Thr Gly Asn Lys Ser Val Val Glu Lys Leu Arg
    50                  55                  60
Pro Ser Asn Leu Glu Ile Val Ile Ser Ala Lys Gly Arg Thr Glu Ser
65                  70                  75                  80
Trp Ile Glu Thr Ile Asp Pro Tyr Asn Leu Val Cys Leu Asp Thr Asp
                85                  90                  95
Ile His Leu Arg Lys Asn Ile Lys Ser Val Thr Ser Glu Asp Ile Phe
            100                 105                 110
Ile Arg Leu Thr Gln Phe Val Thr Glu Asp Val Ser Val Thr Ile Thr
        115                 120                 125
Lys Pro Ile Gly Arg Ala Pro Lys Gly Tyr Glu Tyr Leu Asp Thr Trp
    130                 135                 140
Pro Lys Tyr Leu Val Gln Lys Val Ser Gly Pro Lys Glu Tyr Val Ser
145                 150                 155                 160
Ser Leu Lys Asp His Gly Leu Glu Leu Thr Phe Asn Leu Asn Lys Val
                165                 170                 175
Ser Phe Glu Glu Leu Asp Arg Asn Arg Leu Ala Gln Gly Asn Leu Asp
            180                 185                 190
Glu Val Val Tyr Leu Val Pro Glu Asp Trp Lys Lys Val Tyr Ile Pro
        195                 200                 205
Phe Asp Asn Ser Tyr Met Glu Leu Asn Asp Pro Gln Ala Asp Phe Leu
    210                 215                 220
Arg Leu Leu Phe Leu Lys Gln Glu Phe Ile Pro Leu Asn Ile Asn Leu
225                 230                 235                 240
Pro Val Leu Leu Phe Phe Pro Val Glu Asn Ser Gln Leu Val Asn Pro
                245                 250                 255
Gln Asn Tyr Tyr Leu Glu Glu Asn Ala Pro Leu Val Leu Asn His Gly
            260                 265                 270
Ile Tyr Gln Met Asp Leu Pro Leu Tyr Val Lys Asp Val Ser His Leu
        275                 280                 285
Phe Leu Asp Val Val Lys Asn Asn Ile Ala Leu Thr Ile Ile Met Glu
    290                 295                 300
Pro Pro Val Lys Ser Gln Arg Glu His Phe Ile His Trp Ala Val Glu
305                 310                 315                 320
Phe Leu Asp Glu Lys Thr Leu Glu Asn Thr Phe Val Gln Ala Val Met
                325                 330                 335
Ala Gln Glu Gln Lys Thr Asn Lys His Met Ile Leu Asp Glu Ala Gly
            340                 345                 350
Ile Arg His Arg Phe Arg Glu Tyr Leu Arg Lys Leu Thr Leu Phe Asp
        355                 360                 365
Gln Asn Gly Glu Pro Leu Pro
    370                 375
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<213>Chlamydia trachomatis
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Leu Val Tyr Gly Leu Gly Leu Gly Val Leu Thr Ile Leu Arg Leu Leu
            20                  25                  30
Pro Arg Ser Ser Leu Arg Leu Phe Ser Lys Gly Leu Gly Thr Ala Leu
        35                  40                  45
Phe Tyr Phe Ile Ser Asp Phe Arg Lys Thr Ala Leu Thr Asn Leu Ala
    50                  55                  60
Leu Ala Phe Pro Glu Lys Ser Phe Ala Glu Arg Tyr Gln Ile Ala Arg
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 65                  70                  75                  80
Gln Ser Val Gln Gln Met Ile Ile Thr Phe Val Glu Leu Ala Thr Val
                85                  90                  95
Asp Lys Phe Ala Lys His Ile Asp Glu Met Ile Ala Ile Ala Thr Ser
            100                 105                 110
Glu Asp Ala Pro Glu Gly Phe Phe Pro Glu Glu Val Ser Ser Gln Gln
        115                 120                 125
Glu Leu Asp His Phe Phe Ser Arg Leu Asp Arg Gln Glu Gly Ala Ile
    130                 135                 140
Leu Phe Cys Gly His Gln Ala Asn Trp Glu Leu Pro Phe Leu Tyr Ile
145                 150                 155                 160
Thr Lys Arg Tyr Pro Gly Leu Ala Phe Ala Lys Pro Val Lys Asn Arg
                165                 170                 175
Arg Leu Asn Gln Lys Ile Ile Ser Leu Arg Glu Ser Phe Gln Gly Lys
            180                 185                 190
Ile Val Pro Pro Gln Asn Ala Ile Asn Gln Ala Leu Arg Ala Leu His
        195                 200                 205
Arg Gly Glu Val Val Gly Ile Val Gly Asp Gln Val Leu Leu Ser Ser
    210                 215                 220
Glu Tyr Ser Tyr Pro Leu Phe Gly Ser Gln Ala Phe Thr Thr Thr Ser
225                 230                 235                 240
Pro Ala Leu Leu Ala Tyr Lys Thr Lys Lys Thr Val Ile Ala Val Ala
                245                 250                 255
Ile Tyr Arg Lys Pro Asn Gly Asn Tyr Leu Val Val Pro Ser Lys Ala
            260                 265                 270
Phe His Ala Asn Thr Glu Leu Ser Ile Arg Glu Ser Thr Glu Gln Leu
        275                 280                 285
Met Asp Arg Leu Met Arg Phe Leu Glu Lys Gly Ile Thr Cys Lys Pro
    290                 295                 300
Glu Gln Trp Leu Trp Leu His Lys Arg Trp Lys Arg Lys Leu Arg His
305                 310                 315                 320
Lys Phe Lys Arg Arg Tyr Ala Phe Ser His Ile Leu Ile Ile Val Lys
                325                 330                 335
Gly Thr Ser Leu Gln Ala Leu Gln Arg Phe Leu Ile Glu Phe Gly Glu
            340                 345                 350
Phe Tyr Ala Asp Ala Ser Leu Ser Leu Ala Ile Ile Gly Ala Thr Asp
        355                 360                 365
Thr Val Leu Ala Asn Ser Phe Ala Pro Tyr Ser Leu Gln Phe Phe Ser
    370                 375                 380
Ser Glu Glu Glu Leu Leu Ala Ala Pro Asn Phe Phe Pro Ala Ile Val
385                 390                 395                 400
Asp Leu Phe Gly Leu Ser Arg Lys Thr Arg Leu His Tyr Lys Arg Thr
                405                 410                 415
Gly Ser Arg Lys Ile Phe Thr Arg Asn Glu Leu Lys Asp Ser Leu Leu
            420                 425                 430
Gln Lys Gln Ser Leu Ile Gln Ser Phe His Lys Leu Leu Arg Arg Val
        435                 440                 445
Asp Thr Arg Ser Arg Lys Gly
    450                 455
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<213>Chlamydia trachomatis
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Arg Ser Gln Arg Glu Glu Arg Ala Leu Ser Leu Lys Asp Val Glu Ala
            20                  25                  30
Ala Thr Ser Ile Arg Leu Ser Ala Leu Glu Ala Ile Glu Ala Gly His
        35                  40                  45
Leu Gly Lys Leu Ile Ser Pro Val Tyr Ala Gln Gly Phe Met Lys Lys
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Tyr Ala Ala Phe Leu Asp Met Asp Gly Asp Arg Leu Leu Lys Glu His
 65                  70                  75                  80
Pro Tyr Val Leu Lys Ile Phe Gln Glu Phe Ser Asp Gln Asn Met Asp
                85                  90                  95
Met Leu Leu Asp Leu Glu Ser Met Gly Gly Arg Asn Ser Pro Glu Lys
            100                 105                 110
Ala Ile Arg Ser Trp Leu Asn Leu Gly Trp Ala Gly Val Phe Val Val
        115                 120                 125
Gly Ala Ala Cys Ile Trp Trp Leu Gly Asn Leu Phe Asn Leu Phe
    130                 135                 140
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<400>467
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Asn Asn Leu Glu Lys Lys Gly Phe Thr Ile Ser Ile Pro Pro His Thr
            20                  25                  30
Val Phe Gln Gly Arg Ser Pro Thr Val Ser Cys Thr Val Tyr Gln Ser
        35                  40                  45
Gly Lys Ile Val Val Gln Gly Lys Gly Thr Gln Glu Phe Val Glu Phe
     50                  55                  60
Phe Leu Glu Pro Glu Ile Leu Gln Thr Phe Ser Ser Gln Asn Val Gln
 65                  70                  75                  80
Gln Asp Leu Arg Ser Arg Ile Gly Val Asp Glu Ser Gly Lys Gly Asp
                85                  90                  95
Phe Phe Gly Pro Leu Cys Thr Ala Gly Val Tyr Ala Ser Ser Pro Gln
            100                 105                 110
Ala Ile Glu Ala Leu Tyr Lys Thr Ser Ile Cys Asp Ser Lys Leu Ile
        115                 120                 125
Pro Asp Ala Lys Ile Leu Ser Leu Ala Gln Asn Ile Arg Ser Leu Cys
    130                 135                 140
Ala Cys Lys Val Ile Thr Leu Phe Pro Glu Lys Tyr Asn Ala Leu Tyr
145                 150                 155                 160
Ala Asn Phe Gln Asn Leu Asn Ser Leu Leu Ala Trp Thr His Ala Thr
                165                 170                 175
Ile Ile Asp Asn Leu Ala Pro His Pro Ala Gly Ala Val Phe Ala Ile
            180                 185                 190
Ser Asp Gln Phe Ala Ser Ser Glu Arg Val Leu Leu Gln Ala Val Arg
        195                 200                 205
Lys Lys Arg Ser Asp Ile Glu Leu Ile Gln Arg His Arg Ala Glu Gln
    210                 215                 220
Asp Val Val Val Ala Ala Ala Ser Ile Leu Ala Arg Glu Val Phe Ser
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Leu Pro Tyr Thr Pro
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Asp Arg Asp Glu Tyr Lys Asn Pro Pro Leu Arg Ala Phe Ser Phe Glu
        35                  40                  45
Ser Gln Phe Leu Gln Ile Glu Asn Ala Lys Phe Lys Thr Leu Pro Asp
     50                  55                  60
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Gln Ser Leu Gly Tyr Arg Gln Ala Asp Thr Ser Leu Phe Ala Thr Ile
 65                  70                  75                  80
Pro Val Thr Glu Met Ser Gly Phe Leu Leu Ser Ser Arg Tyr Leu Gly
                 85                  90                  95
Ala Glu Val Ser Trp Lys Ser Ser Lys Glu Leu Gln Asp Thr Asp Pro
            100                 105                 110
Gln Ala Val Gly Tyr Phe Ala Phe Gln Asp Lys Ser Phe Tyr Gln Tyr
        115                 120                 125
Ile Thr Leu Ser Val Gly Ala Tyr Thr Leu Ala Leu Thr Asn Trp Gln
    130                 135                 140
Trp Ser Val Leu Phe Ser Gly Met Val Asp Pro Glu Asn Ile Glu Ile
145                 150                 155                 160
Gly Ser Gly Leu Tyr Gln Val Val Leu Ser Ser Lys Tyr His Ala Ser
                165                 170                 175
Lys Ser Leu Ser Val Ile Met Gly Val Ile Asn Glu Val Gly Leu His
            180                 185                 190
Asp Lys Gln Ala Trp Pro Leu Leu Gly Phe Ser Tyr Lys Pro Glu Asp
        195                 200                 205
Arg Leu Thr Leu Asn Cys Ile Tyr Pro Val Asn Phe Ser Ala Glu Tyr
    210                 215                 220
Gln Cys Thr Pro Val Cys Asp Leu Gly Val Ala Tyr Arg Leu Thr Arg
225                 230                 235                 240
Leu Arg Lys Lys Phe Pro Lys Asn Ser Leu Ala Thr Ser Glu Gly Ile
                245                 250                 255
Phe Glu Tyr Ser Gly Arg Glu Ile Glu Gly Asn Ile Lys Leu Ile Phe
            260                 265                 270
Trp Pro Gly Gln Asn Leu Lys Met Phe Gly Gly Tyr Phe Arg Arg Glu
        275                 280                 285
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Asp His Phe Leu Asn Leu Val Phe Pro Glu Arg Val Ala Ala Ala Tyr
             20                  25                  30
Met Ser Pro Leu Ala Gln Lys Tyr Pro Lys Ala Ala Leu Ser Ile Ala
         35                  40                  45
Ser Leu Ala Gly Phe Leu Leu Gly Ile Leu Lys Leu Ile Thr Phe Pro
     50                  55                  60
Val Leu Cys Ala Ala Gly Leu Phe Val Phe Pro Ile Arg Gly Leu Ile
 65                  70                  75                  80
Ser Cys Leu Phe His Lys Ser Phe Gln Gly Cys Ser Gly Tyr Val Leu
                 85                  90                  95
Ala Thr Phe Leu Ser Leu Phe Ser Leu Ala Leu Thr Ile Val Gly Ile
            100                 105                 110
Val Ser Cys Ile Thr Trp Ala Pro Gly Phe Ile Phe Pro Met Ile Ser
        115                 120                 125
Val Ser Ile Ala Phe Ala Thr Val Glu Thr Cys Phe Gln Ile Tyr Thr
    130                 135                 140
His Leu Phe Pro Ala Leu Glu His Lys Pro Ser Ser Ser Leu Lys Ile
145                 150                 155                 160
Glu Ile Ala Ala Ala Lys Leu Pro Arg Ser Ser Ser Ala Pro Asp Leu
                165                 170                 175
Asn Cys Pro Ser Leu Pro Thr Gln Ser Ala Ser Pro Ser Gln Arg Phe
            180                 185                 190
Ser Ala

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35 40 45
Tyr Asp Ile Ala Leu Ile Ala Ile Ser Ile Leu Cys Ile Val Ser Ile
50 55 60
Ile Leu Trp Thr Gln Gly Ser Gly Leu Ala Leu Phe Ala Ile Ala Pro
65 70 75 80
Ala Leu Ala Ile Gly Ala Leu Gly Val Thr Leu Leu Val Ser Asp Leu
85 90 95
Ala Glu Ser Gln Lys Ser Lys Glu Ile Ala Asp Thr Val Ala Ala Val
100 105 110
Ser Leu Pro Phe Ile Leu Thr Gly Thr Ala Ala Gly Leu Met Phe Ser
115 120 125
Ala Ile Ala Val Gly Lys Gly Ala Val Ile Leu Ala Asn Pro Leu Phe
130 135 140
Leu Met Gly Ser Met Thr Leu Gly Phe Ala Leu Met Ser Leu His Arg
145 150 155 160
Val Thr Tyr Gln Tyr Leu Ser Asn Arg Glu Gln Trp Lys Gln Gln Lys
165 170 175
Lys Leu Glu Gln Val Glu Leu Ala Ala Trp Glu Ser His Leu Pro Lys
180 185 190
Glu Ser Lys Ser Ser Ala Leu Glu Glu Val Arg Tyr Ser Pro Arg Leu
195 200 205
Met Lys Arg Gly Lys Thr Trp Arg Lys Arg Ala Ile Arg Arg Lys Asn
210 215 220
Tyr Ile Pro Ile Pro Leu Val Asp Lys Thr Leu Gln Thr Met Gln Pro
225 230 235 240
Asp Ala Leu Phe Ser Ser Thr Thr Thr His Ser Thr Asp Ser Glu Gln
245 250 255
Ile Leu Thr Ser Val Ser Pro Gln Ser Ser Asp Thr Glu Ser Ser Ser
260 265 270
Ser Ser Ser Phe His Thr Pro Pro Asn Ser Asp Lys Glu Leu Ser Asp
275 280 285
Ser Asn Ser Ser Asp Ser Ser Ser Ser Ser Glu Tyr Met Asp Ala Leu
290 295 300
Glu Thr Val Ala Ala Gly Asp Val Ser Gly Ile Thr Pro Pro Ser Lys
305 310 315 320
Pro Ser Ser Ser Pro Lys Thr Thr Arg Arg Val Val Lys Leu Ser Arg
325 330 335
Ser Glu Arg Asn Ala Gln His His Arg Asn Lys Asp Gln Glu Gln Arg
340 345 350
Gln Asp Ser Ser Glu Ser Ser Asp Glu Glu Ser Ser Ser Asp Ser Ser
355 360 365
Gln Lys Lys Lys Pro Ser Arg Lys
370 375
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20 25 30
Arg Asn His Phe Gly Asp Glu Pro Asn Thr Asn Ile Ser Pro Val Cys

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          35                  40                  45
Thr Gly Met Pro Gly Ser Leu Pro Val Leu Asn Lys Asp Ala Val Arg
     50                  55                  60
Lys Ala Val Leu Phe Gly Cys Ala Val Glu Gly Asp Val Ala Leu Phe
 65                  70                  75                  80
Ser Arg Phe Asp Arg Lys Ser Tyr Phe Tyr Pro Asp Ser Pro Arg Asn
                 85                  90                  95
Phe Gln Ile Thr Gln Tyr Glu His Pro Ile Val Arg Gly Gly Cys Ile
            100                 105                 110
Arg Ala Val Val Glu Gly Glu Glu Lys Thr Phe Xaa Leu Ala Gln Thr
        115                 120                 125
His Leu Glu Asp Asp Ala Gly Met Leu Lys His Phe Gly Asp Phe Ala
    130                 135                 140
Gly Val Asp Tyr Asn Arg Ala Gly Val Pro Leu Ile Glu Ile Val Ser
145                 150                 155                 160
Lys Pro Cys Met Phe Ser Ala Glu Asp Ala Val Ala Tyr Ala Asn Ala
                165                 170                 175
Leu Val Ser Ile Leu Gly Tyr Ile Gly Ile Ser Asp Cys Asn Met Glu
            180                 185                 190
Glu Gly Ser Ile Arg Phe Asp Val Asn Ile Ser Val Arg Pro Arg Gly
        195                 200                 205
Ser Arg Glu Leu Arg Asn Lys Val Glu Ile Lys Asn Met Asn Ser Phe
    210                 215                 220
Thr Phe Met Ala Gln Ala Leu Glu Ala Glu Lys Arg Arg Gln Ile Glu
225                 230                 235                 240
Glu Tyr Leu Ser His Pro Asn Glu Asp Pro Lys Lys Val Val Pro Ala
                245                 250                 255
Ala Thr Tyr Arg Trp Asp Pro Glu Lys Lys Lys Thr Val Leu Met Arg
            260                 265                 270
Leu Lys Glu Arg Ala Glu Asp Tyr Met Tyr Phe Val Glu Pro Asp Leu
        275                 280                 285
Pro Val Leu Gln Ile Thr Glu Thr Tyr Ile Asp Glu Val Arg Gln Thr
    290                 295                 300
Leu Pro Glu Leu Pro His Ser Lys Tyr Met Arg Tyr Ile Thr Asp Phe
305                 310                 315                 320
Asp Ile Ala Glu Asp Leu Ala Met Ile Leu Val Gly Asp Arg His Thr
                325                 330                 335
Ala His Phe Phe Glu Thr Ala Thr Met Ser Cys Lys Asn Tyr Arg Ala
            340                 345                 350
Leu Ser Asn Trp Ile Thr Val Glu Phe Ala Gly Arg Cys Lys Ala Lys
        355                 360                 365
Gly Lys Thr Leu Leu Phe Thr Gly Ile Leu Pro Glu Trp Val Ala Gln
    370                 375                 380
Leu Val Asn Phe Ile Val Arg Gly Val Ile Thr Gly Lys Ile Ala Lys
385                 390                 395                 400
Glu Ile Ala Asp Arg Met Val Ser Ser Phe Gly Glu Ser Pro Glu Asp
                405                 410                 415
Ile Leu Arg Arg His Pro Ser Leu Leu Pro Met Thr Asp Asp His Ala
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Leu Arg Tyr Arg
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<213>Chlamydia trachomatis
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             20                  25                  30
Ser His Asp Glu Gln Ile Gly Ala Phe Leu Ser Leu Cys Lys Glu Arg
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          35                  40                  45
Ala Leu Leu Arg Ala Ser Arg Ile Asp Asp Lys Leu Ala Lys Gly Asp
     50                  55                  60
Pro Ile Gly Leu Leu Ala Gly Ile Pro Ile Gly Val Lys Asp Asn Ile
 65                  70                  75                  80
His Ile Thr Gly Val Lys Thr Thr Cys Ala Ser Lys Met Leu Glu Asn
                 85                  90                  95
Phe Val Ala Pro Phe Asp Ser Thr Val Val Arg Arg Ile Glu Met Glu
            100                 105                 110
Asp Gly Ile Leu Leu Gly Lys Leu Asn Met Asp Glu Phe Ala Met Gly
        115                 120                 125
Ser Thr Thr Arg Tyr Ser Ala Phe His Pro Thr Asn Asn Pro Trp Asp
    130                 135                 140
Leu Glu Arg Val Pro Gly Gly Ser Ser Gly Gly Ser Ala Ala Ala Val
145                 150                 155                 160
Ser Ala Arg Phe Cys Pro Ile Ala Leu Gly Ser Asp Thr Gly Gly Ser
                165                 170                 175
Ile Arg Gln Pro Ala Ala Phe Cys Gly Val Val Gly Phe Lys Pro Ser
            180                 185                 190
Tyr Gly Ala Val Ser Arg Tyr Gly Leu Val Ala Phe Gly Ser Ser Leu
        195                 200                 205
Asp Gln Ile Gly Pro Leu Thr Thr Val Val Glu Asp Val Ala Leu Ala
    210                 215                 220
Met Asp Ala Phe Ala Gly Arg Asp Pro Lys Asp Ser Thr Thr Arg Asp
225                 230                 235                 240
Phe Phe Lys Gly Thr Phe Ser Gln Ala Leu Ser Leu Glu Val Pro Lys
                245                 250                 255
Leu Ile Gly Val Pro Arg Gly Phe Leu Asp Gly Leu Gln Glu Asp Cys
            260                 265                 270
Lys Glu Asn Phe Phe Glu Ala Leu Ala Val Met Glu Arg Glu Gly Ser
        275                 280                 285
Arg Ile Ile Asp Val Asp Leu Ser Val Leu Lys His Ala Val Pro Val
    290                 295                 300
Tyr Tyr Ile Val Ala Ser Ala Glu Ala Ala Thr Asn Leu Ala Arg Phe
305                 310                 315                 320
Asp Gly Val Arg Tyr Gly His Arg Cys Ala Gln Ala Asp Asn Met His
                325                 330                 335
Glu Met Tyr Ala Arg Ser Arg Lys Glu Gly Phe Gly Lys Glu Val Thr
            340                 345                 350
Arg Arg Ile Leu Leu Gly Asn Tyr Val Leu Ser Ala Glu Arg Gln Asn
        355                 360                 365
Ile Phe Tyr Lys Lys Gly Met Ala Val Arg Ala Arg Leu Ile Asp Ala
    370                 375                 380
Phe Gln Ala Ala Phe Glu Arg Cys Asp Val Ile Ala Met Pro Val Cys
385                 390                 395                 400
Ala Thr Pro Ala Ile Arg Asp Gln Asp Val Leu Asp Pro Val Ser Leu
                405                 410                 415
Tyr Leu Gln Asp Ile Tyr Thr Val Ala Val Asn Leu Ala Tyr Leu Pro
            420                 425                 430
Ala Ile Ser Val Pro Ser Gly Leu Ser Lys Glu Gly Leu Pro Leu Gly
        435                 440                 445
Val Gln Phe Ile Gly Glu Arg Gly Ser Asp Gln Gln Ile Cys Gln Val
    450                 455                 460
Gly Tyr Ser Phe Gln Glu His Ser Gln Ile Lys Gln Leu Tyr Pro Lys
465                 470                 475                 480
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<213>Chlamydia trachomatis

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20 25 30
Gln Gly Gly Ile Leu Phe Phe Ala Lys Asn Ala Ala Leu Glu Leu Glu
35 40 45
Asp Ala His Val Glu Glu Phe Val Thr Ser Met Asn Asp Val Ile Ala
50 55 60
Leu Met Gln Glu Val Ile Ala Ile Asp Ile Ser Asp Ile Ile Leu Glu
65 70 75 80
Ala Thr Val His His Phe Val Gly Pro Glu Asp Leu Arg Glu Asp Met
85 90 95
Val Thr Ser Asp Phe Thr Gln Glu Glu Phe Leu Ser Asn Val Pro Val
100 105 110
Ser Leu Gly Gly Leu Val Lys Val Pro Thr Val Ile Lys
115 120 125
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1 5 10 15
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20 25 30
Val Val Leu Gly Ala Ile Asn Thr Gly Ile Leu Gly Val Thr Gly Tyr
35 40 45
Lys Val Asn Leu Leu Thr His Leu Leu Gly Glu Gly Thr Met Trp Thr
50 55 60
Gln Ala Ala Tyr Val Val Thr Gly Ile Ala Gly Val Met Val Cys Leu
65 70 75 80
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85 90 95
Ser Lys Gly Gly Cys His His His His Met Asp Arg Glu
100 105
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<213>Chlamydia trachomatis
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20 25 30
Leu Arg Gln Thr Ser Pro Met Asp Val Val Phe Gly Asn Leu Asp Val
35 40 45
Asn Glu Ala Arg Leu Met Ala Ala Tyr Thr Ser Glu Cys Ala Asp Tyr
50 55 60
Leu Glu Ala His Asp Leu Ala Gly Pro Asp Gly Val Ala Ala Ala Arg
65 70 75 80
Glu Ile Ala Gln Arg Trp Asp Lys Arg Val Arg Asp Leu Gln Asp Lys
85 90 95
Gly Ala Ala Gln Lys Leu Leu Asn Asp Pro Leu Gly Arg Arg Thr Pro
100 105 110
Asn Tyr Gln Ser Lys Asn Pro Gly Glu Tyr Thr Val Gly Asn Ser Met
115 120 125
Phe Tyr Asp Gly Pro Gln Val Ala Asn Leu Gln Asn Val Asp Thr Gly
130 135 140
Phe Trp Leu Asp Met Ser Asn Phe Ser Asp Val Val Leu Ser Arg Glu
145 150 155 160

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Ile Gln Thr Gly Leu Arg Ala Arg Ala Thr Leu Glu Glu Ser Met Pro
                165                 170                 175
Met Leu Glu Asn Leu Glu Glu Arg Phe Arg Arg Leu Gln Glu Thr Cys
            180                 185                 190
Asp Ala Ala Arg Thr Glu Ile Glu Glu Ser Gly Trp Thr Arg Glu Ser
        195                 200                 205
Ala Ser Arg Met Gly Gly Asp Glu Thr Gln Gly Pro Ser Arg Ala Gln
    210                 215                 220
Gln Ala Phe Gln Ser Phe Val Asn Glu Cys Asn Ser Ile Glu Phe Ser
225                 230                 235                 240
Phe Gly Ser Phe Gly Glu His Val Arg Val Leu Cys Ala Arg Val Ser
                245                 250                 255
Arg Gly Leu Val Ala Ala Gly Glu Ala Ile Arg Arg Cys Phe Ser Cys
            260                 265                 270
Cys Lys Gly Ser Thr His Arg Tyr Ala Pro Arg Asp Asp Leu Ser Pro
        275                 280                 285
Glu Gly Ala Ser Leu Ala Glu Thr Leu Ala Arg Phe Ala Asp Asp Met
    290                 295                 300
Gly Ile Glu Gln Gly Ala Asp Gly Thr Tyr Asp Ile Pro Trp Val Asp
305                 310                 315                 320
Asp Trp Arg Arg Gly Val Pro Ser Ile Glu Gly Glu Gly Ser Ala Ser
                325                 330                 335
Ile Tyr Glu Ile Met Met Pro Ile Tyr Glu Val Met Asn Met Asp Leu
            340                 345                 350
Glu Thr Arg Arg Ser Phe Ala Val Gln Gln Gly His Tyr Gln Asp Pro
        355                 360                 365
Arg Ala Ser Asp Tyr Asp Leu Pro Arg Ala Ser Asp Tyr Asp Leu Pro
    370                 375                 380
Arg Ser Pro Tyr Pro Thr Pro Pro Leu Pro Ser Arg Tyr Gln Leu Gln
385                 390                 395                 400
Asn Met Asp Val Glu Ala Gly Phe Arg Glu Ala Val Tyr Ala Ser Phe
                405                 410                 415
Val Ala Gly Met Tyr Asn Tyr Val Val Thr Gln Pro Gln Glu Arg Ile
            420                 425                 430
Pro Asn Ser Gln Gln Val Glu Gly Ile Leu Arg Asp Met Leu Thr Asn
        435                 440                 445
Gly Ser Gln Thr Phe Ser Asn Leu Met Gln Arg Trp Asp Arg Glu Val
    450                 455                 460
Asp Arg Glu
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<213>Chlamydia trachomatis
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  1                 5                  10                  15
Gly Gly Asn Gly Asn Ser Arg Ile Pro Ser His Asn Gly Asp Gly Ser
             20                  25                  30
Asn Arg Arg Ser Gln Asn Thr Lys Gly Asn Asn Lys Val Glu Asp Arg
         35                  40                  45
Val His Ser Leu Tyr Ser Ser Leu Ser Asn Glu Asn Arg Glu Ser Pro
     50                  55                  60
Tyr Pro Val Val Asp Val Ser Ser Met Ile Glu Ser Thr Pro Thr Ser
 65                  70                  75                  80
Gly Glu Thr Pro Arg Ala Ser Arg Gly Val Phe Ser Arg Phe Gln Arg
                 85                  90                  95
Gly Leu Gly Arg Val Ala Asp Lys Val Arg Arg Ala Val Gln Cys Ala
            100                 105                 110
Trp Gly Ser Val Ser Thr Arg Arg Ser Ser Ala Thr Arg Ala Val Glu
        115                 120                 125
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Ser Gly Ser Ser Ser Arg Thr Ala Arg Gly Ala Ser Ser Gly Arg Ser
130 135 140
Ile Leu Leu Gln Gln Leu Glu Gly Cys Val Leu Cys Ser Gln Ile Ser
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20 25 30
Met His His Lys Thr Ile Pro Leu Tyr Val Leu Gly Asn Ser Tyr Cys
35 40 45
Trp Phe Val Ser Lys Leu His Ile Thr Asp Pro Lys Glu Ala Leu Phe
50 55 60
Lys Glu Lys Gly Asp Leu Ser Ile Gln Asn Phe Arg Phe Leu Ser Phe
65 70 75 80
Thr Asp Cys Ser Ser Lys Glu Ser Ser Pro Ser Ile Ile His Gln Lys
85 90 95
Asn Gly Gln Leu Ser Leu Arg Asn Asn Gly Ser Met Ser Phe Cys Arg
100 105 110
Asn His Ala Glu Gly Ser Gly Gly Ala Ile Ser Ala Asp Ala Phe Ser
115 120 125
Leu Gln His Asn Tyr Leu Phe Thr Ala Phe Glu Glu Asn Ser Ser Lys
130 135 140
Gly Asn Gly Gly Ala Ile Gln Ala Gln Thr Phe Ser Leu Ser Arg Asn
145 150 155 160
Val Ser Pro Ile Ser Phe Ala Arg Asn Arg Ala Asp Leu Asn Gly Gly
165 170 175
Ala Ile Cys Cys Ser Asn Leu Ile Cys Ser Gly Asn Val Asn Pro Leu
180 185 190
Phe Phe Thr Gly Asn Ser Ala Thr Asn Gly Gly Ala Ile Cys Cys Ile
195 200 205
Ser Asp Leu Asn Thr Ser Glu Lys Gly Ser Leu Ser Leu Ala Cys Asn
210 215 220
Gln Glu Thr Leu Phe Ala Ser Asn Ser Ala Lys Glu Lys Gly Gly Ala
225 230 235 240
Ile Tyr Ala Lys His Met Val Leu Arg Tyr Asn Gly Pro Val Ser Phe
245 250 255
Ile Asn Asn Ser Ala Lys Ile Gly Gly Ala Ile Ala Ile Gln Ser Gly
260 265 270
Gly Ser Leu Ser Ile Leu Ala Gly Glu Gly Ser Val Leu Phe Gln Asn
275 280 285
Asn Ser Gln Arg Thr Ser Asp Gln Gly Leu Val Arg Asn Ala Ile Tyr
290 295 300
Leu Glu Lys Asp Ala Ile Leu Ser Ser Leu Glu Ala Arg Asn Gly Asp
305 310 315 320
Ile Leu Phe Phe Asp Pro Ile Val Gln Glu Ser Ser Ser Lys Glu Ser
325 330 335
Pro Leu Pro Ser Ser Leu Gln Ala Ser Val Thr Ser Pro Thr Pro Ala
340 345 350
Thr Ala Ser Pro Leu Val Ile Gln Thr Ser Ala Asn Arg Ser Val Ile
355 360 365
Phe Ser Ser Glu Arg Leu Ser Glu Glu Glu Lys Thr Pro Asp Asn Leu
370 375 380
Thr Ser Gln Leu Gln Gln Pro Ile Glu Leu Lys Ser Gly Arg Leu Val
385 390 395 400

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Leu Lys Asp Arg Ala Val Leu Ser Ala Pro Ser Leu Ser Gln Asp Pro
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Gln Ala Leu Leu Ile Met Glu Ala Gly Thr Ser Leu Lys Thr Ser Ser
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Asp Leu Lys Leu Leu Arg
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20 25 30
Leu Ser Asn Ser Gly Asp Glu Asn Phe Tyr Glu Asn Val Glu Leu Leu
35 40 45
Ser Lys Glu Gln Asn Asn Ile Pro Leu Leu Thr Leu Pro Lys Glu Gln
50 55 60
Ser His Leu His Leu Pro Asp Gly Asn Leu Ser Ser His Phe Gly Tyr
65 70 75 80
Gln Gly Asp Trp Thr Phe Ser Trp Lys Asp Ser Asp Glu Gly His Ser
85 90 95
Leu Ile Ala Asn Trp Thr Pro Lys Asn Tyr Val Pro His Pro Glu Arg
100 105 110
Gln Ser Thr Leu Val Ala Asn Thr Leu Trp Asn Thr Tyr Ser Asp Met
115 120 125
Gln Ala Val Gln Ser Met Ile Asn Thr Thr Ala His Gly Gly Ala Tyr
130 135 140
Leu Phe Gly Thr
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<213>Chlamydia trachomatis
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20 25 30
Asn Gly Ser Gly Leu Phe Ser Ser Phe Ser Ile Phe Ser Lys Leu Gln
35 40 45
Gly Phe Ser Gly Thr Gln Asp Gly Phe Glu Glu Ser Ser Gly Glu Ile
50 55 60
Arg Ser Phe Ser Ala Ser Ser Phe Arg Asn Ile Ser Leu Pro Ile Gly
65 70 75 80
Ile Thr Phe Glu Lys Lys Ser Gln Lys Thr Arg Thr Tyr Tyr Tyr Phe
85 90 95
Leu Gly Ala Tyr Ile Gln Asp Leu Lys Arg Asp Val Glu Ser Gly Pro
100 105 110
Val Val Leu Leu Lys Asn Ala Val Ser Trp Asp Ala Pro Met Ala Asn
115 120 125
Leu Asp Ser Arg Ala Tyr Met Phe Arg Leu Thr Asn Gln Arg Ala Leu
130 135 140
His Arg Leu Gln Thr Leu Leu Asn Val Ser Cys Val Leu Arg Gly Gln
145 150 155 160
Ser Ile Val Thr Pro Trp Ile Trp Gly His Leu Gln Val Leu Val Pro
165 170 175
Leu Pro Ser Ile Ala Phe
180

<210>480

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<211>199
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<213>Chlamydia trachomatis
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             20                  25                  30
Gln Ala Val Gln Thr Cys Leu Thr Val Ala Lys His Thr Glu Asn Ala
         35                  40                  45
Lys Val Tyr Asn Gln Lys Arg Lys Arg Tyr His Gln Thr Gly Cys Trp
     50                  55                  60
Arg Gln Leu Lys Lys Leu Leu Cys Cys Cys Cys Pro Lys Glu Lys Pro
 65                  70                  75                  80
Val Ser Gly Ser Ile Thr Ala Leu Ser Leu Trp Met Gln Ser His Ile
                 85                  90                  95
Pro Thr Arg Gly Leu Leu Val Val Gly Tyr Ala Val Tyr Ser Ser Gly
            100                 105                 110
Val Arg Trp Glu Ala Ile Leu Glu Gly Glu Thr Leu Ser Pro Gly Asp
        115                 120                 125
Arg Ala Gln Leu Asp Ala Cys Leu Glu Ser Ala Gln Val Arg Leu Ala
    130                 135                 140
Gly Leu Met Leu Asn Tyr Trp Asp Gly Asp Phe Pro Gly Tyr Gly Thr
145                 150                 155                 160
Ser Gly Gly Arg Phe Ser Pro Arg Met Gln Glu Asp Ile Ile Ala Arg
                165                 170                 175
Phe Arg Asp Lys Val Gly Ile Cys Glu Leu Thr Asp Ala Val Ala Leu
            180                 185                 190
Lys His Phe Cys Arg Arg Thr
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             20                  25                  30
Thr Gln Asp Asp Arg Asp Gly Phe Leu Ala Arg Tyr Gly Gly Phe Gln
         35                  40                  45
Ala Thr Ala Ala Cys His Tyr Glu Asn Gly Ser Ile Phe Gly Val Ala
     50                  55                  60
Phe Gly Gln Leu Tyr Gly Gln Thr Lys Ser Arg Met Tyr Tyr Ser Lys
 65                  70                  75                  80
Asp Ala Gly Asn Met Thr Met Leu Ser Cys Phe Gly Arg Ser Tyr Val
                 85                  90                  95
Asp Ile Lys Gly Thr Glu Thr Val Val Tyr Trp Glu Thr Ala Tyr Gly
            100                 105                 110
Tyr Ser Val His Arg Met His Thr Gln Tyr Phe Asn Asp Lys Thr Gln
        115                 120                 125
Lys Phe Asp His Ser Lys Cys His Trp His Asn Asn Asn Tyr Tyr Ala
    130                 135                 140
Phe Val Gly Ala Glu His Asn Phe Leu Glu Tyr Cys Ile Pro Thr Arg
145                 150                 155                 160
Gln Phe Ala Arg Asp Tyr Glu Leu Ala Gly Phe Met Arg Phe Glu Met
                165                 170                 175
Ala Gly Gly Trp Ser Ser Ala Thr Gln Glu Thr Gly Ser Leu Thr Arg
            180                 185                 190
Tyr Phe Ala Arg Gly Ala Gly His Asn Met Ser Leu Pro Ile Gly Ile
        195                 200                 205
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Val Val His Ala Val Ser His Val Arg Arg Ser Pro Leu Ser Lys Leu
210 215 220
Thr Leu Asn Met Gly Tyr Xaa Pro Asp Ile Trp Arg Val Thr Pro His
225 230 235 240
Cys Asn Met Glu Ile Ile Ala Asn Gly Val Lys Thr Pro Ile Gln Gly
245 250 255
Ser Pro Leu Ala Arg His Ala Phe Phe Leu Glu Val His Asp Thr Leu
260 265 270
Tyr Ile His His Phe Gly Arg Ala Tyr Met Asn Tyr Ser Leu Asp Ala
275 280 285
Arg Arg Arg Gln Thr Ala His Phe Val Ser Met Gly Leu Asn Arg Ile
290 295 300
Phe
305

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<213>Chlamydia trachomatis

<400>482
Val Leu Ala Met Pro Phe Ser Leu Arg Ser Thr Ser Phe Cys Phe Leu
1 5 10 15
Ala Cys Leu Cys Ser Tyr Ser Tyr Gly Phe Ala Ser Ser Pro Gln Val
20 25 30
Leu Thr Pro Asn Val Thr Thr Pro Phe Lys Gly Asp Asp Val Tyr Leu
35 40 45
Asn Gly Asp Cys Ala Phe Val Asn Val Tyr Ala Gly Ala Glu Glu Gly
50 55 60
Ser Ile Ile Ser Ala Asn Gly Asp Asn Leu Thr Ile Thr Gly Gln Asn
65 70 75 80
His Thr Leu Ser Phe Thr Asp Ser Gln Gly Pro Val Leu Gln Asn Tyr
85 90 95
Ala Phe Ile Ser Ala Gly Glu Thr Leu Thr Leu Arg Asp Phe Ser Ser
100 105 110
Leu Met Phe Ser Lys Asn Val Ser Cys Gly Glu Lys Gly Met Ile Ser
115 120 125
Gly Lys Thr Val Ser Ile Ser Gly Ala Gly Glu Val Ile Phe Trp Asp
130 135 140
Asn Ser Val Gly Tyr Ser Pro Leu Ser Thr Val Pro Thr Ser Ser Ser
145 150 155 160
Thr Pro Pro Ala Pro Thr Val Ser Asp Ala Arg Lys Gly Ser Ile Phe
165 170 175
Ser Val Glu Thr Ser Leu Glu Ile Ser Gly Val Lys Lys Gly Val Met
180 185 190
Phe Asp Asn Asn Ala Gly Asn Phe Gly Thr Val Phe Arg Gly Lys Asn
195 200 205
Asn Asn Asn Ala Gly Gly Gly Gly Ser Gly Ser Ala Thr Pro Ser Ser
210 215 220
Thr Thr Phe Thr Val Lys Asn Cys Lys Gly Lys Val Ser Phe Thr Asp
225 230 235 240
Asn Val Ala Ser Cys Gly Gly Gly Val Val Tyr Lys Gly Ile Val Leu
245 250 255
Phe Lys Asp Asn Glu Gly Gly Ile Phe Phe Arg Gly Asn Thr Ala Tyr
260 265 270
Asp Asp Leu Arg Ile Leu Ala Ala Thr Asn Gln Asp Gln Asn Thr Glu
275 280 285
Thr Gly Gly Gly Gly Gly Val Ile Cys Ser Pro Asp Asp Ser Val Lys
290 295 300
Phe Glu Gly Asn Lys Gly Ser Ile Val Phe Asp Tyr Asn Phe Ala Lys
305 310 315 320
Gly Arg Gly Gly Ser Ile Leu Thr Lys Glu Phe Ser Leu Val Ala Asp
325 330 335

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Asp Ser Val Val Phe Ser Asn Asn Thr Ala Glu Lys Gly Gly Gly Ala
340 345 350
Ile Tyr Ala Pro Thr Ile Asn Met Ser Thr Asn Gly Gly Ser Ile Leu
355 360 365
Phe Glu Arg Asn Arg Ala Ala Glu Gly Gly Ala Ile Cys Val Ser Ala
370 375 380
Ala Ser Ser Gly Ser Thr Gly Lys Leu Thr Leu Ser Ala Ser Asp Gly
385 390 395 400
Asp Ile Val Phe Ser Gly Asn Met Thr Ser Asp Arg Pro Gly Glu Arg
405 410 415
Ser Ala Val Arg Ile Leu Ser Ser Gly Thr Thr Val Ala Leu Asn Ala
420 425 430
Ser Gly Leu Ser Lys Leu Ile Phe His Asp Pro Val Val Gln Ile Asn
435 440 445
Ser Ala Ala Ala Ala Ala Ser Thr Pro Ser Pro Ser Ser Ser Ser Thr Pro
450 455 460
Ala Ala Val Thr Ile Asn Gln Ser Gly Asn Gly Ser Val Ile Phe Thr
465 470 475 480
Ala Glu Ser Leu Thr Pro Ser Glu Lys Leu Gln Val Leu Asn Ser Thr
485 490 495
Ser Asn Phe Pro Gly Thr Leu Thr Val Ser Gly Gly Glu Leu Val Val
500 505 510
Thr Glu Gly Ala Thr Leu Thr Thr Gly Thr Ile Thr Ala Thr Ser Gly
515 520 525
Arg Val Ser Leu Gly Ser Gly Ala Ser Leu Ser Ala Val Ala Gly Ala
530 535 540
Ala Asn Asn Asn Tyr Thr Cys Thr Val Ser Lys Leu Gly Ile Asp Leu
545 550 555 560
Glu Ser Phe Leu Thr Pro Asn Tyr Lys Thr Ala Ile Leu Gly Ala Tyr
565 570 575
Gly Thr Val Thr Val Lys Arg Gly Ser Thr Leu Asp Leu Val Met Glu
580 585 590
Asn Glu Ala Glu Val Tyr Asp Asn Pro Leu Phe Val Gly Ser Leu Thr
595 600 605
Ile Pro Phe Val Thr Leu Ser Ser Ser Ser Thr Arg Ser Gly Val Met
610 615 620
Val Ala Gly Val Cys Asp Val Asp Ala Asp Ala Ala His Tyr Gly Tyr
625 630 635 640
Gln Gly Ser Trp Ser Ala Asp Trp Thr Lys Pro Pro Leu Ala Pro Asp
645 650 655
Ala Lys Gly Met Val Pro Pro Asn Thr Ser Asn Thr Leu Tyr Leu Thr
660 665 670
Trp Arg Pro Ala Ser Asn Tyr Gly Glu Tyr Arg Leu Asp Pro Gln Arg
675 680 685
Lys Gly Glu Leu Val Pro Asn Ser Leu Trp Val Ala Gly Ser Ala Leu
690 695 700
Arg Asn Leu Tyr
705

<210>483
<211>140
<212>PRT
<213>Chlamydia trachomatis
<400>483
Leu Tyr Leu Asn Glu Leu Arg Pro Phe Val Gln Ala Glu Phe Ser Tyr
1 5 10 15
Ala Asp His Glu Ser Phe Thr Glu Glu Gly Asp Gln Ala Arg Ala Phe
20 25 30
Lys Ser Gly His Leu Leu Asn Leu Ser Val Pro Val Gly Val Lys Phe
35 40 45
Asp Arg Cys Ser Ser Thr His Pro Asn Lys Tyr Ser Phe Met Ala Ala
50 55 60

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Tyr Ile Cys Asp Ala Tyr Arg Thr Ile Ser Gly Thr Glu Thr Thr Leu
65 70 75 80
Leu Ser His Gln Glu Thr Trp Thr Thr Asp Ala Phe His Leu Ala Arg
85 90 95
His Gly Val Val Val Arg Gly Ser Met Tyr Ala Ser Leu Thr Ser Asn
100 105 110
Ile Glu Val Tyr Gly His Gly Arg Tyr Glu Tyr Arg Asp Ala Ser Arg
115 120 125
Gly Tyr Gly Leu Ser Ala Gly Ser Arg Val Arg Phe
130 135 140

<210>484
<211>212
<212>PRT
<213>Chlamydia trachomatis
<400>484
Gly Met Arg Cys Leu Ser Met Ala Ile Lys Glu Ala Gly Ser Leu Arg
1 5 10 15
Gly Ile Leu Asn Thr Ala Asn Asn Gly Pro Tyr Thr Leu Lys Ala Thr
20 25 30
Trp Thr Lys Thr Gly Tyr Asn Pro Gly Pro Glu Arg Val Ala Ser Leu
35 40 45
Val Pro Asn Ser Leu Trp Gly Ser Ile Leu Asp Ile Arg Ser Ala His
50 55 60
Ser Ala Ile Gln Ala Ser Val Asp Gly Arg Ser Tyr Cys Arg Gly Leu
65 70 75 80
Trp Val Ser Gly Val Ser Asn Phe Phe Tyr His Asp Arg Asp Ala Leu
85 90 95
Gly Gln Gly Tyr Arg Tyr Ile Ser Gly Gly Tyr Ser Leu Gly Ala Asn
100 105 110
Ser Tyr Phe Gly Ser Ser Met Phe Gly Leu Ala Phe Thr Glu Val Phe
115 120 125
Gly Arg Ser Lys Asp Tyr Val Val Cys Arg Ser Asn His His Ala Cys
130 135 140
Ile Gly Ser Val Tyr Leu Ser Thr Gln Gln Ala Leu Cys Gly Ser Tyr
145 150 155 160
Leu Phe Gly Asp Ala Phe Ile Arg Ala Ser Tyr Gly Phe Gly Asn Gln
165 170 175
His Met Lys Thr Ser Tyr Thr Phe Ala Glu Glu Ser Asp Val Arg Trp
180 185 190
Asp Asn Asn Cys Leu Ala Gly Glu Ile Gly Ala Gly Leu Pro Ile Val
195 200 205
Ile Thr Pro Ser
210

<210>485
<211>115
<212>PRT
<213>Chlamydia trachomatis
<400>485
Ser Val Asp His Ala Phe Gln Ser Ala Phe Val Ser Phe Phe Phe Val
1 5 10 15
Ser Lys Gln Cys Ser Tyr Glu Ser Ser Tyr Gln Ser Ser Ser Ala Arg
20 25 30
Phe Ser Ile Leu Gln Ser Leu Val Ala Gln Leu Leu Val Leu Leu Gln
35 40 45
Leu Val Gly Leu Ser Phe Leu Arg Ile Trp Met Ile Gln Leu Asn Asp
50 55 60
Arg Tyr Asp Trp Leu Gly Ser Asn Gln Lys Ile Asn Val Leu Lys Leu
65 70 75 80
Gln Leu Gly Thr Lys Pro Pro Ala Asn Ala Pro Ser Asp Leu Thr Leu
85 90 95
Gly Asn Glu Met Pro Lys Tyr Gly Tyr Gln Gly Ser Trp Lys Leu Ala

100 105 110

Trp Asp Ser
115

<210>486
<211>524
<212>PRT
<213>Chlamydia trachomatis
<400>486

Val Val Phe Gly Asn Leu Leu Gly Ser Phe Thr Val Leu Gly Arg Gly
1 5 10 15
His Ser Leu Thr Phe Glu Asn Ile Arg Thr Ser Thr Asn Gly Ala Ala
20 25 30
Leu Ser Asn Ser Ala Ala Asp Gly Leu Phe Thr Ile Glu Gly Phe Lys
35 40 45
Glu Leu Ser Phe Ser Asn Cys Asn Ser Leu Leu Ala Val Leu Pro Ala
50 55 60
Ala Thr Thr Asn Lys Gly Ser Gln Thr Pro Thr Thr Thr Ser Thr Pro
65 70 75 80
Ser Asn Gly Thr Ile Tyr Ser Lys Thr Asp Leu Leu Leu Leu Asn Asn
85 90 95
Glu Lys Phe Ser Phe Tyr Ser Asn Leu Val Ser Gly Asp Gly Gly Ala
100 105 110
Ile Asp Ala Lys Ser Leu Thr Val Gln Gly Ile Ser Lys Leu Cys Val
115 120 125
Phe Gln Glu Asn Thr Ala Gln Ala Asp Gly Gly Ala Cys Gln Val Val
130 135 140
Thr Ser Phe Ser Ala Met Ala Asn Glu Ala Pro Ile Ala Phe Val Ala
145 150 155 160
Asn Val Ala Gly Val Arg Gly Gly Gly Ile Ala Ala Val Gln Asp Gly
165 170 175
Gln Gln Gly Val Ser Ser Ser Thr Ser Thr Glu Asp Pro Val Val Ser
180 185 190
Phe Ser Arg Asn Thr Ala Val Glu Phe Asp Gly Asn Val Ala Arg Val
195 200 205
Gly Gly Gly Ile Tyr Ser Tyr Gly Asn Val Ala Phe Leu Asn Asn Gly
210 215 220
Lys Thr Leu Phe Leu Asn Asn Val Ala Phe Pro Val Tyr Ile Ala Ala
225 230 235 240
Lys Gln Pro Thr Ser Gly Gln Ala Ser Asn Thr Ser Asn Asn Tyr Gly
245 250 255
Asp Gly Gly Ala Ile Phe Cys Lys Asn Gly Ala Gln Val Gly Ser Asn
260 265 270
Asn Ser Gly Ser Val Ser Phe Asp Gly Glu Gly Val Val Phe Phe Ser
275 280 285
Ser Asn Val Ala Ala Gly Lys Gly Gly Ala Ile Tyr Ala Lys Lys Leu
290 295 300
Ser Val Ala Asn Cys Gly Pro Val Gln Phe Leu Arg Asn Ile Ala Asn
305 310 315 320
Asp Gly Gly Ala Ile Tyr Leu Gly Glu Ser Gly Glu Leu Ser Leu Ser
325 330 335
Ala Asp Tyr Gly Asp Ile Ile Phe Asp Gly Asn Leu Lys Arg Thr Ala
340 345 350
Lys Glu Asn Ala Ala Asp Val Asn Gly Val Thr Val Ser Ser Gln Ala
355 360 365
Ile Ser Met Gly Ser Gly Gly Lys Ile Thr Thr Leu Arg Ala Lys Ala
370 375 380
Gly His Gln Ile Leu Phe Asn Asp Pro Ile Glu Met Ala Asn Gly Asn
385 390 395 400
Asn Gln Pro Ala Gln Ser Ser Lys Leu Leu Lys Ile Asn Asp Gly Glu
405 410 415
Gly Tyr Thr Gly Asp Ile Val Phe Ala Asn Gly Ser Ser Thr Leu Tyr

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Sequence Listing

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            420                 425                 430
Gln Asn Val Thr Ile Glu Gln Gly Arg Ile Val Leu Arg Glu Lys Ala
        435                 440                 445
Lys Leu Ser Val Asn Ser Leu Ser Gln Thr Gly Gly Ser Leu Tyr Met
    450                 455                 460
Glu Ala Gly Ser Thr Leu Asp Phe Val Thr Pro Gln Pro Pro Gln Gln
465                 470                 475                 480
Pro Pro Ala Ala Asn Gln Leu Ile Thr Leu Ser Asn Leu His Leu Ser
                485                 490                 495
Leu Ser Ser Leu Leu Ala Asn Asn Ala Val Thr Asn Pro Pro Thr Asn
            500                 505                 510
Pro Pro Ala Gln Asp Ser Gln Ser Cys Ser His Trp
        515                 520
<210>487
<211>79
<212>PRT
<213>Chlamydia trachomatis
<400>487
Leu Ile Leu Ser Leu Ser Phe Cys Val Met Gln Thr Ser Phe His Lys
  1               5                  10                  15
Phe Phe Leu Ser Met Ile Leu Ala Tyr Ser Cys Cys Ser Leu Asn Gly
             20                  25                  30
Gly Gly Tyr Ala Ala Glu Ile Met Val Pro Gln Gly Ile Tyr Asp Gly
         35                  40                  45
Glu Thr Leu Thr Val Ser Phe Pro Tyr Thr Val Ile Gly Asp Pro Ser
     50                  55                  60
Gly Thr Thr Val Phe Ser Ala Gly Glu Leu Thr Leu Lys Asn Pro
 65                  70                  75
<210>488
<211>522
<212>PRT
<213>Chlamydia trachomatis
<400>488
Pro Ala Met Ile Lys Arg Thr Ser Leu Ser Phe Ala Cys Leu Ser Phe
  1               5                  10                  15
Phe Tyr Leu Ser Thr Ile Ser Ile Leu Gln Ala Asn Glu Thr Asp Thr
             20                  25                  30
Leu Gln Phe Arg Arg Phe Thr Phe Ser Asp Arg Glu Ile Gln Phe Val
         35                  40                  45
Leu Asp Pro Val Ser Leu Ile Thr Ala Gln Asn Val Thr Phe Ser Asn
     50                  55                  60
Ile Asn Ser Trp Gly Arg Gly Val Cys Thr Ile Ala Asp Asn Thr Gln
 65                  70                  75                  80
Thr Gln Ile Phe Ser Asn Ser Ile Asn Thr Thr Ser Ala Ala Gly Gly
                85                  90                  95
Val Phe Asp Met Val Thr Ile Ser Phe Thr Ala Ser Asn Asn Ala Asn
            100                 105                 110
Leu Leu Phe Cys Asn Asn Tyr Cys Thr His Asn Lys Gly Gly Gly Ala
        115                 120                 125
Ile Arg Ser Lys Gly Pro Ile Arg Phe Ser Asn Asn Gln Asp Val Leu
    130                 135                 140
Phe Tyr Asn Asn Thr Thr Ala Gly Ala Gln Tyr Thr Gly Thr Gly Asn
145                 150                 155                 160
Lys Ser Glu Lys Asn Arg Gly Gly Ala Leu Tyr Ala Lys Asn Ile Thr
                165                 170                 175
Leu Thr Gly Asn Arg Thr Leu Ala Phe Ile Asn Asn Met Ser Gly Asp
            180                 185                 190
Cys Gly Gly Ala Ile Ala Ala Asn Thr Gln Ile Ser Ile Thr Asp Thr
        195                 200                 205
Ala Lys Gly Val Leu Phe Glu Asn Asn His Thr Leu Asn His Ile Pro
    210                 215                 220
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Asp Thr Arg Ala Glu Asn Met Ala Arg Gly Gly Ala Ile Cys Ser Arg
225                 230                 235                 240
Lys Ser Ser Cys Ser Ile Ser Asn Asn Leu Gly Pro Ile Ile Phe Asn
                245                 250                 255
Tyr Asn Gln Gly Gly Lys Gly Gly Ala Ile Ser Ala Thr Gln Cys Val
            260                 265                 270
Ile Ser Asn Asn Glu Glu Arg Ile Val Phe Ser Asn Asn Ser Ser Ile
        275                 280                 285
Gly Trp Asn Lys Ser Thr His Ala Ser Asn Gly Gly Ala Ile Gln Thr
    290                 295                 300
Ala Gln Gly Phe Thr Leu Gln Asn Asn Lys Gly Pro Ile Tyr Phe Asp
305                 310                 315                 320
Ser Asn Thr Ala Ala His Ala Gly Gly Ala Ile Asp Cys Gly Tyr Ile
                325                 330                 335
Asp Ile Arg Asn Asn Gly Pro Ile Tyr Phe Leu Asn Asn Ser Ala Ala
            340                 345                 350
Trp Gly Ala Ala Phe Asn Leu Ser Lys Leu Arg Pro Ala Thr Asn Tyr
        355                 360                 365
Ile His Thr Gly Thr Gly Asp Ile Val Phe Asn Asn Asn Val Val Phe
    370                 375                 380
Lys Phe Asp Ala Asn Leu Leu Gly Met Arg Lys Leu Phe His Ile Asn
385                 390                 395                 400
Asn Asn Thr Gln Thr Pro Tyr Thr Leu Ser Leu Gly Ala Lys Glu Asp
                405                 410                 415
Thr Arg Ile Tyr Phe Tyr Asp Leu Phe Gln Trp Glu Arg Val Arg Glu
            420                 425                 430
Pro Asn Asn Ala Gln Val Ser Pro Ser Ser Arg Asn Val Ile Thr Ile
        435                 440                 445
Asn Pro Ile Glu Glu Phe Ser Gly Ala Val Val Phe Ser Tyr Lys Gln
    450                 455                 460
Met Ser Ser Asp Ile Lys Thr Leu Met Gly Thr Glu His Asn Tyr Ile
465                 470                 475                 480
Arg Glu Ala Pro Thr Thr Leu Lys Phe Gly Thr Leu Ala Ile Glu Asp
                485                 490                 495
Gly Ala Glu Leu Glu Phe Phe Asp Ile Pro Phe Thr Gln Asn Pro Thr
            500                 505                 510
Ser Leu Leu Ala Leu Gly Ser Asp Leu Arg
        515                 520
<210>489
<211>521
<212>PRT
<213>Chlamydia trachomatis
<400>489
Ser Thr Cys Phe Arg Lys Arg Pro Thr Leu Thr Val Gly Lys His Gly
  1               5                  10                  15
Lys Leu Asn Ile Thr Asn Leu Gly Val Ile Leu Pro Ile Ile Leu Lys
             20                  25                  30
Glu Gly Lys Ser Pro Pro Cys Ile Arg Val Asn Pro Gln Asp Met Thr
         35                  40                  45
Gln Asn Thr Asp Thr Gly Gln Thr Pro Ser Ser Thr Ser Ser Ile Ser
     50                  55                  60
Thr Pro Met Ile Ile Phe Asn Gly Arg Leu Ser Ile Val Asp Glu Asn
 65                  70                  75                  80
Tyr Glu Ser Val Tyr Asp Ser Met Asp Leu Ser Arg Gly Lys Ala Glu
                 85                  90                  95
Gln Pro Ile Leu Ser Ile Glu Thr Thr Asn Asp Gly Gln Leu Gly Pro
            100                 105                 110
Asn Trp Gln Asn Ser Leu Asn Thr Ser Leu Leu Ser Pro Pro His Tyr
        115                 120                 125
Gly Tyr Gln Gly Leu Trp Thr Pro Asn Trp Ile Thr Thr Thr Tyr Thr
    130                 135                 140
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Ile Thr Leu Asn Asn Asn Ser Ser Ala Pro Thr Ser Ala Asn Ser Ile
145                 150                 155                 160
Ala Glu Gln Lys Lys Thr Ser Glu Thr Phe Thr Pro Asn Ser Thr Thr
                165                 170                 175
Thr Ala Gly Ile Pro Ser Ile Lys Ala Ser Ala Gly Ser Gly Ser Gly
            180                 185                 190
Ser Ser Thr Thr Thr Asp Val Gln Val Thr Arg His Thr Leu Thr Val
        195                 200                 205
Asn Trp Thr Pro Val Gly Tyr Ile Val Asp Pro Ile Arg Arg Gly Asp
    210                 215                 220
Leu Ile Ala Asn Ser Leu Val His Ser Gly Arg Asn Met Thr Met Gly
225                 230                 235                 240
Leu Arg Ser Leu Leu Pro Asp Asn Ser Trp Phe Ala Leu Gln Gly Ala
                245                 250                 255
Ala Thr Thr Leu Phe Thr Lys Gln Gln Lys Arg Leu Ser Tyr His Gly
            260                 265                 270
Tyr Ser Ser Ala Ser Lys Gly Tyr Thr Val Ser Ser Gln Ala Ser Gly
        275                 280                 285
Ala His Gly His Lys Phe Leu Leu Ser Phe Ser Gln Ser Ser Asp Lys
    290                 295                 300
Met Lys Glu Lys Glu Thr Asn Asn Arg Leu Ser Ser Arg Tyr Tyr Leu
305                 310                 315                 320
Ser Ala Leu Cys Phe Glu His Pro Met Phe Asp Arg Ile Ala Leu Ile
                325                 330                 335
Gly Ala Ala Ala Cys Asn Tyr Gly Thr His Asn Met Arg Ser Phe Tyr
            340                 345                 350
Gly Thr Lys Arg Ser Ser Lys Gly Lys Phe His Ser Thr Thr Leu Gly
        355                 360                 365
Ala Ser Leu Arg Cys Glu Leu Arg Asp Ser Met Pro Leu Arg Ser Ile
    370                 375                 380
Met Leu Thr Pro Phe Ala Gln Ala Leu Phe Ser Arg Thr Lys Pro Gly
385                 390                 395                 400
Ala Ile Arg Glu Ser Gly Asp Leu Ala Arg Leu Phe Thr Leu Glu Gln
                405                 410                 415
Ala His Thr Ala Ile Val Ser Pro Ile Gly Ile Lys Gly Ala Tyr Ser
            420                 425                 430
Ser Asp Thr Trp Pro Thr Leu Ser Trp Glu Met Glu Leu Ala Tyr Gln
        435                 440                 445
Pro Thr Leu Tyr Trp Lys Arg Pro Leu Leu Asn Thr Leu Leu Ile Gln
    450                 455                 460
Asn Asn Gly Ser Trp Val Thr Thr Asn Thr Pro Leu Ala Lys His Ser
465                 470                 475                 480
Phe Tyr Gly Arg Gly Ser His Ser Leu Lys Phe Ser His Leu Lys Leu
                485                 490                 495
Phe Ala Asn Tyr Gln Ala Glu Val Ala Thr Ser Thr Val Ser His Tyr
            500                 505                 510
Ile Asn Ala Gly Gly Ala Leu Val Phe
        515                 520
<210>490
<211>989
<212>PRT
<213>Chlamydia trachomatis
<400>490
Leu Ser Ser Arg Ser Gly Tyr Phe His Cys Leu Thr Leu His Gln Cys
  1               5                  10                  15
Arg Arg Ser Ser Gly Leu Leu Thr Met Lys Lys Ala Phe Phe Phe Phe
            20                  25                  30
Leu Ile Gly Ser Ser Leu Ser Gly Leu Ala Arg Glu Val Pro Ser Arg
        35                  40                  45
Ile Phe Leu Met Pro Asn Ser Val Pro Asp Pro Thr Lys Glu Ser Leu
    50                  55                  60
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Ser Asn Lys Ile Ser Leu Thr Gly Asp Thr His Asn Leu Thr Asn Cys
65 70 75 80
Tyr Leu Asp Asn Leu Arg Tyr Ile Leu Ala Ile Leu Gln Lys Thr Pro
85 90 95
Asn Glu Gly Ala Ala Val Thr Ile Thr Asp Tyr Leu Ser Phe Phe Asp
100 105 110
Thr Gln Lys Glu Gly Ile Tyr Phe Ala Lys Asn Leu Thr Pro Glu Ser
115 120 125
Gly Gly Ala Ile Gly Tyr Ala Ser Pro Asn Ser Pro Thr Val Glu Ile
130 135 140
Arg Asp Thr Ile Gly Pro Val Ile Phe Glu Asn Asn Thr Cys Cys Arg
145 150 155 160
Pro Phe Thr Ser Ser Asn Pro Asn Ala Ala Val Asn Lys Ile Arg Glu
165 170 175
Gly Gly Ala Ile His Ala Gln Asn Leu Tyr Ile Asn His Asn His Asp
180 185 190
Val Val Gly Phe Met Lys Asn Phe Ser Tyr Val Arg Gly Gly Ala Ile
195 200 205
Ser Thr Ala Asn Thr Phe Val Val Ser Glu Asn Gln Ser Cys Phe Leu
210 215 220
Phe Met Asp Asn Ile Cys Ile Gln Thr Asn Thr Ala Gly Lys Gly Gly
225 230 235 240
Ala Ile Tyr Ala Gly Thr Ser Asn Ser Phe Glu Ser Asn Asn Cys Asp
245 250 255
Leu Phe Phe Ile Asn Asn Ala Cys Cys Ala Gly Gly Ala Ile Phe Ser
260 265 270
Pro Ile Cys Ser Leu Thr Gly Asn Arg Gly Asn Ile Val Phe Tyr Asn
275 280 285
Asn Arg Cys Phe Lys Asn Val Glu Thr Ala Ser Ser Glu Ser Ser Asp
290 295 300
Gly Gly Ala Ile Lys Val Thr Thr Arg Leu Asp Val Thr Gly Asn Arg
305 310 315 320
Gly Arg Ile Phe Phe Ser Asp Asn Ile Thr Lys Asn Tyr Gly Gly Ala
325 330 335
Ile Tyr Ala Pro Val Val Thr Leu Val Asp Asn Gly Pro Thr Tyr Phe
340 345 350
Ile Asn Asn Ile Ala Asn Asn Lys Gly Gly Ala Ile Tyr Ile Asp Gly
355 360 365
Thr Ser Asn Ser Lys Ile Ser Ala Asp Arg His Ala Ile Ile Phe Asn
370 375 380
Glu Asn Ile Val Thr Asn Val Thr Asn Ala Asn Gly Thr Ser Thr Ser
385 390 395 400
Ala Asn Pro Pro Arg Arg Asn Ala Ile Thr Val Ala Ser Ser Ser Gly
405 410 415
Glu Ile Leu Leu Gly Ala Gly Ser Ser Gln Asn Leu Ile Phe Tyr Asp
420 425 430
Pro Ile Glu Val Ser Asn Ala Gly Val Ser Val Ser Phe Asn Lys Glu
435 440 445
Ala Asp Gln Thr Gly Ser Val Val Phe Ser Gly Ala Thr Val Asn Ser
450 455 460
Ala Asp Phe His Gln Arg Asn Leu Gln Thr Lys Thr Pro Ala Pro Leu
465 470 475 480
Thr Leu Ser Asn Gly Phe Leu Cys Ile Glu Asp His Ala Gln Leu Thr
485 490 495
Val Asn Arg Phe Thr Gln Thr Gly Gly Val Val Ser Leu Gly Asn Gly
500 505 510
Ala Val Leu Ser Cys Tyr Lys Asn Gly Ala Gly Asn Ser Ala Ser Asn
515 520 525
Ala Ser Ile Thr Leu Lys His Ile Gly Leu Asn Leu Ser Ser Ile Leu
530 535 540
Lys Ser Gly Ala Glu Ile Pro Leu Leu Trp Val Glu Pro Thr Asn Asn

Substitute Sheet (Rule 26)

545 550 555 560
Ser Asn Asn Tyr Thr Ala Asp Thr Ala Ala Thr Phe Ser Leu Ser Asp
565 570 575
Val Lys Leu Ser Leu Ile Asp Asp Tyr Gly Asn Ser Pro Tyr Glu Ser
580 585 590
Thr Asp Leu Thr His Ala Leu Ser Ser Gln Pro Met Leu Ser Ile Ser
595 600 605
Glu Ala Ser Asp Asn Gln Leu Arg Ser Asp Asp Met Asp Phe Ser Gly
610 615 620
Leu Asn Val Pro His Tyr Gly Trp Gln Gly Leu Trp Ser Trp Gly Trp
625 630 635 640
Ala Lys Thr Gln Asp Pro Glu Pro Ala Ser Ser Ala Thr Ile Thr Asp
645 650 655
Pro Lys Lys Ala Asn Arg Phe His Arg Thr Leu Leu Leu Thr Trp Leu
660 665 670
Pro Ala Gly Tyr Val Pro Ser Pro Lys His Arg Ser Pro Leu Ile Ala
675 680 685
Asn Thr Leu Trp Gly Asn Met Leu Leu Ala Thr Glu Ser Leu Lys Asn
690 695 700
Ser Ala Glu Leu Thr Pro Ser Asp His Pro Phe Trp Gly Ile Thr Gly
705 710 715 720
Gly Gly Leu Gly Met Met Val Tyr Gln Asp Pro Arg Glu Asn His Pro
725 730 735
Gly Phe His Met Arg Ser Ser Gly Tyr Ser Ala Gly Met Ile Ala Gly
740 745 750
Gln Thr His Thr Phe Ser Leu Lys Phe Ser Gln Thr Tyr Thr Lys Leu
755 760 765
Asn Glu Arg Tyr Ala Lys Asn Asn Val Ser Ser Lys Asn Tyr Ser Cys
770 775 780
Gln Gly Glu Met Leu Phe Ser Leu Gln Glu Gly Phe Leu Leu Ala Lys
785 790 795 800
Leu Val Gly Leu Tyr Ser Tyr Gly Asp His Asn Cys His His Phe Tyr
805 810 815
Thr Gln Gly Glu Asn Leu Thr Ser Gln Gly Thr Phe Arg Ser Gln Thr
820 825 830
Met Gly Gly Ala Val Phe Phe Asp Leu Pro Met Lys Pro Phe Gly Ser
835 840 845
Thr His Ile Leu Thr Ala Pro Phe Leu Gly Ala Leu Gly Ile Tyr Ser
850 855 860
Ser Leu Ser His Phe Thr Glu Val Gly Ala Tyr Pro Arg Ser Phe Ser
865 870 875 880
Thr Lys Thr Pro Leu Ile Asn Val Leu Val Pro Ile Gly Val Lys Gly
885 890 895
Ser Phe Met Asn Ala Thr Gln Arg Pro Gln Ala Trp Thr Val Glu Leu
900 905 910
Ala Tyr Gln Pro Val Leu Tyr Arg Gln Glu Leu Glu Ile Ala Thr Gln
915 920 925
Leu Leu Ala Ser Lys Gly Ile Trp Phe Gly Ser Gly Ser Pro Ser Ser
930 935 940
Arg His Ala Met Ser Tyr Lys Ile Ser Gln Gln Thr Gln Pro Leu Ser
945 950 955 960
Trp Leu Thr Leu His Phe Gln Tyr His Gly Phe Tyr Ser Ser Ser Thr
965 970 975
Phe Cys Asn Tyr Leu Asn Gly Glu Ile Ala Leu Arg Phe
980 985

<210>491
<211>168
<212>PRT
<213>Chlamydia trachomatis
<400>491
Arg Thr Asp Arg Gly Glu Asp Arg Ser Ser Cys Thr Thr Gly Val Ile

```
  1               5                  10                  15
Asp Lys Glu Glu Ile Ala Val Ile Thr Leu Lys Arg Ile Ala Arg Ser
            20                  25                  30
Ser Ile Asp Ser Ala Thr Phe Ser Cys Cys Ile Ser Leu Asn Thr Asp
        35                  40                  45
Val Val His Lys Glu Lys Thr Arg Leu Ile Leu Ala His Asn Lys Gly
    50                  55                  60
Ile Ser Gly Thr Asn Gly Ser Ser Ser Asp Ile Arg Lys Val Leu His
65                  70                  75                  80
Lys Ser Asp His Ile Met Ile Val Ile Tyr Val Lys Ile Leu Ser Met
                85                  90                  95
Asn Cys Ser Ala Phe Ser Tyr Phe Ile Asn Ser Cys Ile Arg Ile Thr
            100                 105                 110
Arg Cys Lys Trp Ser Ala Thr Ser Ile Ile Phe Lys Asp Tyr Arg Thr
        115                 120                 125
Tyr Cys Ile Thr Asn Leu His Gly Arg Arg Ile Gly Thr Arg Ile Thr
    130                 135                 140
Asn Arg Thr Thr Thr Phe Arg Gly Glu Ile Phe Cys Lys Ile Asn Thr
145                 150                 155                 160
Phe Phe Leu Cys Ile Lys Lys Ala
                165
```

6665445.62.1.6626

<210>492
<211>348
<212>PRT
<213>Chlamydia trachomatis
<400>492

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Phe Ser Ser Phe Thr Pro Phe Leu Ile Tyr Asn Pro Ser Leu Gly Ala
  1               5                  10                  15
Ala Lys His Thr Leu Leu Leu Arg Ser Asn Leu Pro Ser Leu Phe Gln
            20                  25                  30
Tyr Leu Phe Arg Leu Leu Leu Leu Pro Tyr Arg Val Leu Ser Thr Pro
        35                  40                  45
Pro Pro Pro Val Ile Ser Arg Pro Ser Thr Pro Ser Ala Pro Lys Pro
    50                  55                  60
Ser Thr Pro Pro Pro Leu Leu Pro Lys Ala Pro Lys Pro Val Lys Thr
65                  70                  75                  80
Gln Glu Asp Leu Leu Pro Leu Val Pro Glu Gln Val Phe Val Glu Met
                85                  90                  95
Tyr Glu Asp Met Ala Arg Arg Gln Thr Ile Glu Ala Leu Val Pro Ala
            100                 105                 110
Trp Asp Ser Asp Ile Ile Phe Lys Cys Leu Cys Tyr Phe His Thr Leu
        115                 120                 125
Tyr Pro Gly Leu Ile Pro Leu Glu Thr Phe Pro Pro Ala Thr Ile Phe
    130                 135                 140
Asn Phe Lys Gln Lys Ile Ile Ser Ile Leu Glu Asp Lys Lys Ala Val
145                 150                 155                 160
Leu Arg Gly Glu Pro Ile Lys Gly Pro Leu Pro Ile Trp Cys Ser Lys
                165                 170                 175
Glu Asn Tyr Arg Arg His Leu Gln Arg Thr Thr Leu Leu Pro Val Phe
            180                 185                 190
Met Trp Tyr His Pro Thr Pro Lys Thr Leu Ser Asp Thr Met Gln Thr
        195                 200                 205
Met Lys Gln Leu Ala Ile Lys Gly Ser Val Gly Ala Ser His Trp Leu
    210                 215                 220
Leu Val Ile Val Asp Ile Gln Ala Arg Arg Leu Val Tyr Xaa Asp Ser
225                 230                 235                 240
Leu Tyr Asn Tyr Val Met Pro Pro Glu Asn Met Lys Lys Glu Leu Gln
                245                 250                 255
Ser Phe Ala Gln Gln Leu Asp Gln Val Tyr Pro Ala Tyr Asp Ser Lys
            260                 265                 270
Lys Phe Ser Val Lys Ile Ala Ala Lys Glu Val Ile Gln Arg Gly Ser
```

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        275                 280                 285
Gly Ser Ser Cys Gly Ala Trp Cys Cys Gln Phe Leu His Trp Tyr Leu
    290                 295                 300
Lys Asp Pro Leu Thr Asp Ala Leu Asn Asp Leu Pro Val Asp Ser Val
305                 310                 315                 320
Glu Arg His Glu Asn Leu Ala Ser Phe Val Gln Ala Cys Glu Ala Ala
                325                 330                 335
Val Gln Asp Leu Pro Glu Leu Ser Trp Pro Glu Ala
            340                 345
<210>493
<211>113
<212>PRT
<213>Chlamydia trachomatis
<400>493
His Arg His Leu Lys Ile Met Ser Glu Ser Gln Ala Gly Thr Asn Ala
  1               5                  10                  15
Ser Met Val Cys Arg Arg Ala Ile Ser Ser Tyr Ile Ser Thr Asn Thr
            20                  25                  30
Cys Ser Gly Thr Lys Gly Arg Arg Ser Ser Cys Val Leu Thr Gly Leu
        35                  40                  45
Gly Ala Leu Gly Arg Arg Gly Gly Gly Val Glu Gly Phe Gly Ala Glu
    50                  55                  60
Gly Val Leu Gly Arg Asp Met Thr Gly Gly Gly Gly Val Leu Arg Thr
65                  70                  75                  80
Arg Tyr Gly Lys Arg Arg Arg Arg Lys Arg Tyr Trp Asn Arg Asp Gly
                85                  90                  95
Arg Leu Leu Leu Ser Arg Arg Val Cys Leu Ala Ala Pro Arg Glu Gly
            100                 105                 110
Leu

<210>494
<211>339
<212>PRT
<213>Chlamydia trachomatis
<400>494
Leu Phe Val Cys Leu Ile Asn Glu Gln Phe Ile Met Glu Pro Ile His
  1               5                  10                  15
Asn Pro Pro Pro Gln Thr Cys Ser Tyr Ser Arg Pro Ser Thr Thr Tyr
            20                  25                  30
Thr Ser Phe Lys Asp Ala Ser Cys Asp Thr Lys Val Thr Arg Ile Ile
        35                  40                  45
Ile Ala Leu Phe Leu Ile Val Ile Ser Cys Gly Leu Ile Leu Cys Ala
    50                  55                  60
Tyr Thr Phe Arg Asp Leu Leu Asp Ala Asp Tyr Leu Ala Gln Glu Gly
65                  70                  75                  80
Pro Gln Gln Ala Thr Lys Leu Leu Gln Gln Leu Asp Asp Val Leu Thr
                85                  90                  95
Gly Pro Pro Leu Pro Ile Trp Asp Asn Glu His Leu Phe Gln Phe Ser
            100                 105                 110
Cys Leu Met Gln Asn Lys His Arg Arg Val Leu Pro Ile Asp Ile Cys
        115                 120                 125
Asn Pro Leu Thr Lys Phe Asn Phe Leu Glu Cys Ile Cys Asn Cys Leu
    130                 135                 140
Met Thr Lys Gln Ser Val Asn Val Asn Glu Thr Asp Met Cys Glu Leu
145                 150                 155                 160
Phe Cys Pro Pro Thr Cys Thr Pro Glu Asn Tyr Arg Arg Leu Leu Cys
                165                 170                 175
Thr Ser Ser Val Phe Pro Phe Val Met Trp His Asp Pro Ser Ala Asp
            180                 185                 190
Thr Gln Glu Ala Met Leu Thr Lys Met Asp Gln Thr Met Ser Ser Gly
        195                 200                 205
```

Arg Val Gly Asn Ser His Trp Val Leu Val Ile Val Asp Ile Glu Tyr
210 215 220
Arg Cys Val Thr Phe Phe Asp Ser Leu Cys Asp Tyr Val Ala Ser Pro
225 230 235 240
Gln Gln Met Arg Glu Gln Leu Glu Gly Leu Ala Val Ser Leu Gly Ala
245 250 255
Ile Tyr Pro Lys Glu Gly Gly Ala Asp Ser Asp Gln Glu Glu Leu Leu
260 265 270
Ser Pro Phe Gln Val Arg Ile Gly Ser Thr Val Lys Val Gln Ser Pro
275 280 285
Gly Glu Phe Thr Cys Gly Ala Trp Cys Cys Gln Phe Leu Ala Trp Tyr
290 295 300
Leu Glu Asn Pro Asp Phe Asp Leu Glu Glu Lys Val Pro Thr Asn Pro
305 310 315 320
Ser Glu Arg Arg Ala Leu Leu Ala Asp Phe Ile Ser Thr Thr Glu Gln
325 330 335
Ala Met Ser

<210>495
<211>753
<212>PRT
<213>Chlamydia trachomatis
<400>495
Pro Arg Ile Tyr Gly Thr Val Phe Val Asn Lys Cys Arg Lys Tyr Cys
1 5 10 15
Gly Pro Phe Phe Leu Asn Thr Gln His Val Glu Leu Leu Val Ser Gly
20 25 30
Lys Gln Ser Ser Pro Gln Asp Leu Leu Gly Ile Val Ser Glu Ser Leu
35 40 45
Asn Gln Asp Arg Ile Val Leu Phe Arg Pro Gly Ala Glu Thr Val Phe
50 55 60
Val Glu Leu Arg Gly Lys Ile Gln Gln Ala Glu Ser His His Ser Gly
65 70 75 80
Ile Phe Ser Leu Pro Val Met Lys Gly Ile Ser Pro Gln Asp Tyr Arg
85 90 95
Val Tyr His Gln Asn Gly Leu Leu Ala His Asp Pro Tyr Ala Phe Pro
100 105 110
Leu Leu Trp Gly Glu Ile Asp Ser Phe Leu Phe His Glu Gly Thr His
115 120 125
Gln Arg Ile Tyr Glu Arg Met Gly Ala Ile Pro Cys Glu Ile Asp Gly
130 135 140
Val Pro Gly Val Arg Phe Ile Val Trp Ala Pro His Ala Gln Arg Val
145 150 155 160
Ser Val Ile Gly Asp Phe Asn Gly Trp His Gly Leu Val Asn Pro Leu
165 170 175
His Lys Val Ser Asp Gln Gly Val Trp Glu Leu Phe Val Pro Gly Leu
180 185 190
Thr Ala Gly Ala Cys Tyr Lys Trp Glu Met Val Thr Glu Ser Gly Gln
195 200 205
Val Leu Ile Lys Ser Asp Pro Tyr Gly Lys Phe Phe Gly Pro Pro Pro
210 215 220
Arg Ser Val Ser Val Val Ile Asp Asp Ser Tyr Glu Trp Asn Asp Ser
225 230 235 240
Glu Trp Leu Glu Glu Arg Ile Lys Lys Thr Glu Gly Pro Met Asn Leu
245 250 255
Tyr Glu Val His Val Gly Ser Trp Gln Trp Gln Glu Gly Gln Pro Leu
260 265 270
Asn Tyr Lys Glu Leu Ala Asp Gln Leu Ala Leu Tyr Cys Lys Gln Met
275 280 285
His Tyr Thr His Val Glu Leu Leu Pro Val Thr Glu His Pro Leu Asn
290 295 300

Glu Ser Trp Gly Tyr Gln Thr Thr Gly Tyr Tyr Ala Pro Thr Ser Arg
305 310 315 320
Tyr Gly Ser Phe Glu Asp Leu Gln Tyr Phe Ile Asp Thr Met His Gln
325 330 335
His Gly Ile Gly Val Ile Leu Asp Trp Val Pro Gly His Phe Pro Ile
340 345 350
Asp Ser Phe Ala Met Ser Gly Phe Asp Gly Thr Pro Leu Tyr Glu Tyr
355 360 365
Thr Arg Asn Pro Ser Pro Leu His Pro His Trp His Thr Tyr Thr Phe
370 375 380
Asp Tyr Ala Lys Pro Glu Val Cys Asn Phe Leu Leu Gly Ser Ala Leu
385 390 395 400
Phe Trp Ile Asp Lys Met His Val Asp Gly Ile Arg Val Asp Ala Val
405 410 415
Ser Ser Met Leu Tyr Leu Asp Tyr Gly Arg Tyr Ala Gly Glu Trp Val
420 425 430
Pro Asn Arg Tyr Gly Gly Arg Glu Asn Leu Asp Ala Ile Arg Phe Leu
435 440 445
Gln Gln Phe Asn Thr Val Ile His Glu Lys Tyr Pro Gly Val Leu Thr
450 455 460
Phe Ala Glu Glu Ser Thr Thr Phe Pro Lys Ile Thr Val Ser Val Glu
465 470 475 480
Glu Gly Gly Leu Gly Phe Asp Tyr Lys Trp Asn Met Gly Trp Met His
485 490 495
Asp Thr Leu His Tyr Phe Glu Lys Asp Phe Pro Tyr Arg Pro Tyr His
500 505 510
Gln Ser Asp Leu Thr Phe Pro Gln Trp Tyr Ala Phe Ser Glu Arg Phe
515 520 525
Leu Leu Pro Phe Ser His Asp Glu Val Val His Gly Lys Arg Ser Leu
530 535 540
Ile Gly Lys Met Pro Gly Asp Ala Trp Arg Gln Phe Ala Gln Leu Arg
545 550 555 560
Leu Leu Leu Gly Tyr Gln Ile Cys Gln Pro Gly Lys Lys Leu Leu Phe
565 570 575
Met Gly Gly Glu Phe Gly Gln Gly Arg Glu Trp Ser Pro Gly Arg Glu
580 585 590
Leu Asp Trp Glu Leu Leu Asp Ile Ser Tyr His Gln Gly Val His Leu
595 600 605
Cys Ser Gln Glu Leu Asn Ala Leu Tyr Val Gln Ser Pro Gln Leu Trp
610 615 620
Gln Ala Asp His Leu Pro Ser Ser Phe Arg Trp Val Asp Phe Ser Asp
625 630 635 640
Val Arg Asn Gly Val Val Ala Tyr Leu Arg Phe Ala Asp Ala Asp Ala
645 650 655
Lys Lys Ala Leu Leu Cys Val His His Phe Gly Val Gly Tyr Phe Pro
660 665 670
His Tyr Leu Leu Pro Ile Leu Pro Leu Glu Ser Cys Asp Leu Leu Met
675 680 685
Asn Thr Asp Asn Thr Arg Phe Gly Gly Ser Gly Lys Gly Phe Arg Glu
690 695 700
Pro Glu Ile Leu Thr Pro Glu Ile Ala Arg Gln Glu Arg Glu Ala Ala
705 710 715 720
Gly Leu Ile Glu Ala Asp Asp Glu Ser Gly Pro Asp Cys Trp Gly Leu
725 730 735
Asp Ile Glu Leu Pro Pro Ser Ala Thr Leu Ile Phe Ser Val Thr Leu
740 745 750
Gln

<210>496
<211>179
<212>PRT

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<213>Chlamydia trachomatis
<400>496

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His Pro Cys Val His Arg Tyr Ala Asp Glu Ser Leu His Gly Ile Lys
  1               5                  10                  15
Lys Asn Arg Phe Pro Pro Lys Val Lys Gly Arg His Lys Asp His Glu
            20                  25                  30
Pro Ile Asn His Phe Asp Asp Arg Leu Asp Asn Leu Gly Glu Lys Phe
        35                  40                  45
Leu Ser Leu Gln Glu Glu Lys Lys Ser Leu Asn Gly Ala Thr Leu Pro
    50                  55                  60
Val Glu Ser Tyr Leu Ala Thr Gln Gln Lys Arg Ser Leu Pro Gln Gly
65                  70                  75                  80
Gly Lys Glu Leu Ser Asp Leu Asp Ser Asn Phe Gln Lys Gln Phe Pro
                85                  90                  95
Lys Asp Leu Val Asp Cys Ser Val Tyr Gln Lys Arg Glu Val Pro Arg
            100                 105                 110
Val Glu Tyr Leu Arg Lys Lys Asp His Asn Ile Phe Cys Ile Tyr Leu
        115                 120                 125
Gln Lys Arg Ser His Arg Tyr Val Val Pro Ala Phe Ile Ser Thr Phe
    130                 135                 140
Ser Lys Arg Phe Phe Ile Leu Gln Glu Ile Ile Leu Pro Cys Ser Ser
145                 150                 155                 160
Thr Arg Lys Arg Asp Glu Tyr Thr Pro Gly Leu Met Ile Ala Ser Ser
                165                 170                 175
Leu Glu Thr
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<210>497
<211>336
<212>PRT
<213>Chlamydia trachomatis
<400>497

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Tyr Lys Gly Ala Gly Ser Phe Met Ile Lys Ile Ala Gln Ser Phe Lys
  1               5                  10                  15
Pro Tyr Ile Met Glu Pro Gly Ala Lys Ile Pro Ile Pro Gly Ser Thr
            20                  25                  30
Leu Tyr Ala Gln Val Phe Pro Ser Leu Trp Arg Ile Phe Ser Ser Ser
        35                  40                  45
His Glu Leu Val Asn Glu Gly Arg Val Pro Ile Gln Gly Pro Leu Gln
    50                  55                  60
Arg Phe Ala Val Phe Gln Asn Leu Asn Arg Gly Gly Val Ala Val Met
65                  70                  75                  80
Thr Glu Gln Tyr Lys Tyr Tyr Leu Ser Pro Asn Gly Cys Tyr Thr Arg
                85                  90                  95
Ser Ile Ala Asp Leu Pro Ser Ala Ser Phe Tyr Ser Gly Glu Tyr Val
            100                 105                 110
Ser Phe Gly Val His Lys His Ala Asp Xaa Glu Lys Ile Arg Arg Arg
        115                 120                 125
Lys Asp Leu Lys Glu Ile Leu Pro Phe Leu Phe Arg His Gly Ala Leu
    130                 135                 140
Leu Gln Asn Gln Pro Asn Leu Ser Met Glu Lys Thr Glu Val Ala Leu
145                 150                 155                 160
Leu Leu Asp Thr Leu Asp Ala Ala Ile Ala Glu Pro Asn Lys Glu Arg
                165                 170                 175
Val Phe Ser Leu Leu Glu Arg Phe Val Tyr Ala Gly Leu Ser Lys Thr
            180                 185                 190
Leu Leu Pro Arg Leu Tyr Asp Glu Glu Tyr Gln Gly Ile Val Ser Glu
        195                 200                 205
Asp Pro Arg Pro Gly Asn Glu Ala Val Pro Phe Ser Leu Leu Arg Ala
    210                 215                 220
Ala Ala Leu Ser Met Arg Arg Ile Phe Ile Gln Glu Ser Asp Gly Val
225                 230                 235                 240
```

Val Thr Leu Leu Pro Ala Leu Pro Pro Glu Phe Pro Cys Gly Arg Trp
245 250 255
Ile Gly Leu Tyr Phe Glu Asn Ile Gly Glu Ile Ser Phe Glu Trp Ser
260 265 270
Lys Lys Thr Ile Arg Arg Val Ile Leu Lys Ala His Val Ser Arg Glu
275 280 285
Leu Ala Ile Ile Ser Pro Gly Val Tyr Ser Ser Arg Phe Arg Val Glu
290 295 300
Glu Gln Gly Arg Ile Ile Ser Cys Lys Ile Lys Asn Leu Leu Glu Lys
305 310 315 320
Val Glu Ile Lys Ala Gly Thr Thr Tyr Leu Trp Asp Arg Phe Cys Lys
325 330 335

<210>498
<211>267
<212>PRT
<213>Chlamydia trachomatis
<400>498
Leu Ser Gly Gly Asn Thr Leu Ser Ser Ile Leu Lys Met Phe Ile Pro
1 5 10 15
Ile Lys Ile Ala Arg Ala Phe Ile Leu Gln Ile Phe Leu Ile Asn Lys
20 25 30
Met Thr Pro Ser Ala Leu Phe His Lys Arg Leu Ile Glu Gln Phe Thr
35 40 45
Ile Phe Leu Ser Val Asp Arg Gly Ile Ser Pro Leu Ser Val Gln Ala
50 55 60
Tyr Cys Gln Asp Val Leu Leu Phe Leu Gln Arg Ala Ser Ile Glu Ala
65 70 75 80
Thr Asp Arg Ile Asn Gln Glu Ser Val Phe Leu Phe Val Glu Lys Cys
85 90 95
His Lys Ala Lys Glu Ser Glu Thr Thr Leu Ala Arg Arg Leu Ile Ala
100 105 110
Leu Lys Val Phe Phe His Phe Leu Lys Asp Val Lys Met Leu Asp Gln
115 120 125
Gln Pro Phe Ile Glu His Pro Lys Ile Trp Lys Arg Leu Pro Ser Ile
130 135 140
Leu Ser Thr Glu Glu Val Asn Ser Leu Leu Asp Gln Pro Leu Asn Ile
145 150 155 160
Pro Asn Leu Asp Thr His Ile Ala Ser Arg Asp Ala Ala Ile Leu Tyr
165 170 175
Thr Phe Tyr Ala Thr Gly Ile Arg Val Ser Glu Leu Cys Asp Leu Cys
180 185 190
Ile Gly Asp Ile Ser Asp Asp Phe Ile Arg Val Thr Gly Lys Gly Arg
195 200 205
Lys Thr Arg Leu Val Pro Ile Ser Ile Lys Ala Lys Gln Ala Ile Asp
210 215 220
Ala Tyr Leu Ser Ser Phe Arg Asp Glu Leu Gln Lys Lys Ile Pro Leu
225 230 235 240
Lys Asn Met Tyr Phe Cys Leu Ser Glu Gly Lys Asn Ser Ile Val Pro
245 250 255
Val Tyr Gly Asn Ala Leu Leu Phe Met Gln Asn
260 265

<210>499
<211>99
<212>PRT
<213>Chlamydia trachomatis
<400>499
Thr Thr Lys Lys Asn Pro Ser Glu Glu His Val Phe Leu Ser Ile Arg
1 5 10 15
Gly Lys Lys Leu Asp Arg Ser Cys Val Trp Lys Arg Ile Thr Phe Tyr
20 25 30
Ala Lys Leu Val Thr Thr Lys Arg Ile Ser Pro His Ser Leu Arg His

```
          35                  40                  45
Pro Phe Ala Thr His Leu Leu Asn Asn His Ala Asp Leu Arg Ile Ile
     50                  55                  60
Gln Glu Met Leu Gly His Ser Arg Ile Ser Ser Thr Glu Ile Tyr Thr
 65                  70                  75                  80
His Val Ala Ser Glu Ser Leu Ile Glu Lys Phe His Thr Tyr His Pro
                 85                  90                  95
Arg Asp Ile
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<210>500
<211>177
<212>PRT
<213>Chlamydia trachomatis

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<400>500
Ser Lys Asn Ser Thr Pro Thr Ile Leu Glu Ile Ser Lys Ile Cys Asp
  1               5                  10                  15
Glu Val Phe Ser Ser Phe Ser Leu Glu Gln Val Ser Tyr Lys Gly Thr
            20                  25                  30
Arg Ala Ser Leu Glu Asn Ser Leu Val Tyr Pro Arg Leu His Leu Tyr
          35                  40                  45
Trp Asp Asn Asn Ser His Thr Gly Arg Asp Ser Lys Asn Tyr Lys Glu
     50                  55                  60
Ser Ala Pro Leu Pro Val Leu Gln Ile Leu Leu Leu Gln Gln Glu Arg
 65                  70                  75                  80
Phe Pro Lys Val Glu Leu Glu Ile Pro Asn Thr Pro His Gln Pro Gln
                 85                  90                  95
Lys Gln Gln Asn Ser Thr Lys Pro Ser Pro Lys Gly Leu Thr Ala Val
            100                 105                 110
Ser Phe Thr Phe Pro His Leu Phe Ser Asp Ala Ala Glu Lys Thr Thr
          115                 120                 125
Asp Ser Gly Tyr Pro Asn Lys His Thr Arg Tyr Leu Asn Lys Lys Ile
    130                 135                 140
Phe Arg Arg Lys Ala Met Pro Arg Ile Gly Leu Glu Pro Thr Cys Arg
145                 150                 155                 160
Glu Ala Leu Asp Pro Lys Ser Ser Val Ser Thr Asn Phe Thr Thr Trp
                165                 170                 175
Ala
```

<210>501
<211>101
<212>PRT
<213>Chlamydia trachomatis

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<400>501
Met Lys Gln Leu Ser Ile Leu Leu Gly Met Val Ser Leu Ser Ser Ala
  1               5                  10                  15
Val Phe Gly Ala Asp Ala Val Tyr Ser Gly Ser Leu Val Gln Pro Ser
            20                  25                  30
Glu Ser Val Leu Val Ala Gly Val Glu Phe Glu Glu Gln Glu Gly Glu
          35                  40                  45
Arg Ile Pro Tyr Ser Phe Tyr Tyr Pro Tyr Gln Tyr Asp Tyr Tyr Tyr
     50                  55                  60
Pro Asn Thr Gly Val Asp Glu Asp Thr Pro Glu Ser Phe Gln Glu Lys
 65                  70                  75                  80
His Glu Cys Pro Cys Lys Lys Pro Val Pro Glu Lys Lys Lys Lys Lys
                 85                  90                  95
Pro Arg Arg Arg Ser
            100
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<210>502
<211>316
<212>PRT
<213>Chlamydia trachomatis

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<400>502
Val Pro Ser Phe Leu Lys Gly Leu Asp Thr Leu Thr Ser Val Thr Met
1 5 10 15
Asp Thr Pro Thr Pro Leu Ser Ser Val Pro Thr Asn Ala Ser Leu Lys
20 25 30
Gly Glu Pro Gly Ser Ser Ser Gln Phe Ser Ser Ala Glu Lys Gly Val
35 40 45
Leu Lys Thr Ser Ile Gly Asp Val Val Leu Ser Gln Ser Ile Glu Asp
50 55 60
Gly Gly Asn Glu Thr Gln Ile Ser Leu Val Gly Val Val Asn Ile Asn
65 70 75 80
Met Ala Gln Glu Glu Leu Pro Ala Leu Val Ser Pro Arg Thr Phe Ile
85 90 95
Phe Leu Pro Pro Glu Thr Val Glu Leu Glu Ile Gln Ile Ala Glu Met
100 105 110
Phe Gln Ala Leu Glu Glu Thr Pro Ser Ser Asp Ser Arg Ser Leu Gln
115 120 125
Gln Lys Glu Thr Ser Ala Gln Thr Pro Pro Ala Pro Ser Gly Lys Val
130 135 140
Ser Ile Phe Ser Leu Gln Ala Gln Gly Ser Ser Gln Thr Arg Ser Leu
145 150 155 160
Pro Ser Ser Gln Glu Ser Leu Ser Pro Gln Gln Pro Ala Arg Ala Ile
165 170 175
Gln Gly Leu Asn Thr Pro Phe Ser Pro Ala Ala Arg Cys Thr Ile Arg
180 185 190
Ala Val Pro Leu Ser Ile Val Pro His Arg Arg Ala Asn Pro Lys Pro
195 200 205
Ser Gln Ser Val Leu Ile Ile Ala Leu Val Leu Thr Arg Gln Ala Ile
210 215 220
Gln Gln Glu Arg Leu Asn Phe Leu Pro Arg Asn Gly Asn Phe Leu Leu
225 230 235 240
Lys Gln Leu Lys Pro Ala Gln Gln Glu Glu Lys Lys Glu Thr Val Asn
245 250 255
Lys Lys Asp Ile Leu Ile Lys Asn Arg Ile Val Ile Ile Leu Thr Lys
260 265 270
Arg Lys Ile Ser Arg Met Ile Cys Lys Cys Leu Leu Leu Lys Asp Pro
275 280 285
Leu Ile Arg Lys Met Lys Ile Leu Arg Lys Tyr Phe Leu Ser Leu Thr
290 295 300
Leu Leu Ile Met Arg Pro Leu Ile Leu Arg Pro Ile
305 310 315
<210>503
<211>294
<212>PRT
<213>Chlamydia trachomatis
<400>503
Ser Lys Ser Lys Thr Phe Ser Lys Cys Ser His His Ser Ser Arg Thr
1 5 10 15
Tyr Gln Thr Gly His Ser Thr Gly Thr Ala Gln Leu Ser Ser Gln Glu
20 25 30
Trp Glu Phe Ser Ser Gln Thr Val Lys Thr Cys Ser Thr Gly Arg Glu
35 40 45
Lys Arg Asp Gly Gln Gln Glu Arg His Ser Asp Gln Glu Gln Asn Ser
50 55 60
Asp His Ser Tyr Gln Glu Glu Asp Leu Ser Asp Asp Met Gln Val Ser
65 70 75 80
Ser Ser Lys Arg Ser Ser His Pro Glu Asp Glu Asn Thr Glu Glu Val
85 90 95
Phe Ser Val Ser His Phe Ala Tyr His Ala Ala Pro His Pro Ala Ser
100 105 110
Asn Leu Asp Gln Glu Ser Asn Gln Ser Thr Phe Gln Lys Arg Pro Pro

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        115                 120                 125
Ser Pro Met Ser Leu Phe Ser Ser Gln Asn Ala Thr Glu Glu Ala Pro
    130                 135                 140
Lys Glu Ala Arg Val Glu Asn Val Phe Leu Arg Phe Met Arg Leu Met
145                 150                 155                 160
Ala Arg Ile Leu Gly Gln Ala Glu Ala Glu Ala His Glu Leu Tyr Leu
                165                 170                 175
Arg Val Lys Glu Arg Thr Asp Ser Val Asp Ala Leu Thr Leu Leu Leu
            180                 185                 190
Ser Lys Ile Asn Asn Glu Lys Gly Ala Ile Asp Trp Asn Gln Asp Glu
        195                 200                 205
Glu Met Arg Ala Leu Val Asp Gln Ala Lys Lys Leu Gly Val Pro Ile
    210                 215                 220
Gly Asp Ser Tyr Asp Trp Ser Glu Glu Gly Lys Lys Leu Leu Lys Glu
225                 230                 235                 240
Asn Ile Gln Met Arg Lys Glu Asn Met Glu Lys Ile Thr Gln Leu Glu
                245                 250                 255
Arg Thr Asp Met Gln Arg His Leu Gln Glu Val Ser Gln Cys His Gln
            260                 265                 270
Ala Arg Ser Asn Val Leu Lys Leu Leu Lys Glu Leu Met Asp Thr Phe
        275                 280                 285
Ile Tyr Asn Met Arg Pro
    290
<210>504
<211>271
<212>PRT
<213>Chlamydia trachomatis
<400>504
Ile Thr Lys Asp Ser Tyr Tyr Tyr Val Ile Leu Val Cys Ser Arg Thr
  1               5                  10                  15
Asp Val Ala Leu Ser Gln Thr Leu Asp Leu Pro Asp Ala Ser Leu Ala
            20                  25                  30
Val Gln Thr Glu Lys Phe Pro Tyr Ser Cys Ser Ile Ser Lys Glu Ser
        35                  40                  45
Ala Pro Ser Cys Ile Arg Lys Ile Phe Ala His Leu Ala Ser Gln Lys
    50                  55                  60
Glu Ser Ala Pro Leu Ser Phe Ser Arg Leu Gln Pro Thr Thr Pro Lys
65                  70                  75                  80
Glu Arg Ile Leu Phe Phe Gly Ser Ser Pro Ser Ser Gln Leu Ser Ser
                85                  90                  95
Thr Val Arg Thr Thr Thr Ser Ser Pro Trp Asn Leu Phe Ser Asn Ser
            100                 105                 110
Gln Ala Arg Asn Ser Thr Arg Lys Leu Ser Glu Lys Leu His Leu Ser
        115                 120                 125
Ser Glu Leu Ser Ala Arg Asp Ser Thr Lys Pro Ser Ser Ser Glu Pro
    130                 135                 140
Val Lys Pro Ser Glu Asn Leu Leu His Thr Pro Glu His His Lys Glu
145                 150                 155                 160
Ser Phe Ser Ser Leu Lys Lys Asp Asn Leu Ser Pro Ile Met Glu Glu
                165                 170                 175
Ile Asp Ser Phe Ser Ala Glu Thr Glu Ser Leu Glu Glu Arg Leu Val
            180                 185                 190
Thr Gln Lys Lys Glu Glu Thr Val Ala Gln Glu Gln Lys His Pro Leu
        195                 200                 205
Leu Arg Thr Ser Thr Pro Pro Ser Lys Ala Ser Gly Glu Ser Gln Asp
    210                 215                 220
Ser Ser Glu His Ser Ser Lys Glu Asp Pro Tyr Ser Gln Gln Pro Ser
225                 230                 235                 240
His Lys Ile Gln Arg Arg Gly Thr Ser Gln Lys Ser Cys Ser Tyr His
                245                 250                 255
His Thr Thr Tyr Cys Arg Asp Leu Leu Phe Lys Leu Pro Ser His
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260 265 270

<210>505
<211>320
<212>PRT
<213>Chlamydia trachomatis
<400>505

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His Lys Lys Lys Lys Lys Pro Leu His Lys Asn Lys Asn Ile Leu Tyr
  1               5                  10                  15
Leu Glu Pro Pro Pro Leu Leu Pro Lys His Gln Glu Lys Val Lys Thr
            20                  25                  30
Arg Pro Ser Thr Leu Arg Lys Lys Thr Leu Ile Leu Ser Asn Leu Leu
        35                  40                  45
Thr Lys Tyr Lys Glu Glu Glu Arg Ala Lys Arg Val Val Pro Ile Ile
    50                  55                  60
Thr Pro Pro Thr Val Gly Ile Phe Ser Leu Ser Tyr Leu Leu Thr Lys
65                  70                  75                  80
Gln Gly Ile Leu Ala Asp Phe Ser Ala Tyr Ser Ala Tyr Lys Asp Asn
                85                  90                  95
Leu Glu Thr Thr Gln Gln Glu Leu Thr Met Leu His Gln Glu Arg Ile
            100                 105                 110
Glu Gln Val Gln Lys Ile Val Asp Lys Ser Lys Thr Met Arg Phe Trp
        115                 120                 125
Asp Ser Leu Ala Ser Ile Val Ala Thr Ile Ile Pro Trp Ile Glu Met
    130                 135                 140
Gly Val Ala Val Thr Ile Ile Ala Leu Gly Gly Gly Ile Leu Ser Trp
145                 150                 155                 160
Cys Ser Leu Phe Ala Ala Leu Ile Met Ile Val Ile Ser Leu Leu Glu
                165                 170                 175
Ala Phe Asp Gly Trp Arg Ala Ile Ala Lys His Leu Pro Gly Asn Asp
            180                 185                 190
Leu Glu Lys Lys Met Arg Tyr Leu Gly Tyr Val Lys Leu Ala Leu Thr
        195                 200                 205
Val Phe Ser Cys Leu Leu Ser Leu Ser Ala Leu Tyr Val Ala Lys Leu
    210                 215                 220
Gly Met Ser Pro Leu Leu Glu Gly Val Val Lys Ser Ile Ala Pro Ala
225                 230                 235                 240
Leu Ser Gly Met Leu Gly Leu Thr Gln Gly Val Ala Leu Tyr Leu Gln
                245                 250                 255
Ser Ser Ser Gln Lys Ile Arg Ala Arg Cys Thr Gln Ile Asp Ala Arg
            260                 265                 270
Ile Glu Leu Ile Asn Trp Glu Arg Asp Glu Tyr Phe Leu Arg Ala Glu
        275                 280                 285
Gln Leu Leu Asp Ser Met Gln Thr Ser Phe Glu Gln Leu Thr Glu Thr
    290                 295                 300
Leu Gln Leu Gln Arg Glu Ile Asp Gln Thr Phe Thr Asp Ala Leu Arg
305                 310                 315                 320
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<210>506
<211>506
<212>PRT
<213>Chlamydia trachomatis
<400>506

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Pro Asn Val Tyr Arg Arg Leu Thr Ile Ala Ile Leu Pro Met Thr Ile
  1               5                  10                  15
Thr Val Pro Gln Glu Thr Leu Pro Ser Leu Gln Thr Ile Ala Thr Gly
            20                  25                  30
Glu Gln Thr Glu Thr Ser Cys Glu Glu Ala Ser Ala Leu Ser Asn Glu
        35                  40                  45
Ile Gln Leu Leu Glu Pro Gly Gln Ala Ala Ile Leu Arg Ser Leu Ser
    50                  55                  60
Asp Leu Cys Leu Ser Val Ile Glu Gln Thr Glu Lys Thr Leu Pro His
65                  70                  75                  80
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Ser Lys His Ser Pro Ser Phe Arg Glu Ser Cys Pro Leu Lys Tyr Leu
                85                  90                  95
Ser Gln Gln Thr Ser Ala Ser Ser Arg Thr Gln Glu Ser Ala Thr Ala
            100                 105                 110
Glu Gln Gln Ser Leu Thr Pro Thr Pro Thr Pro Gln Lys Thr Pro Thr
        115                 120                 125
Gln Thr Leu His Asn Lys Pro Ser Thr Pro Ile Ser His Lys Ser Ser
    130                 135                 140
Val Gln Gly Arg Ile Gln Thr Ser Pro Gln His Ser Thr Pro Leu Arg
145                 150                 155                 160
Ser Ile Pro Val Ile Ile Ser Leu Pro Asn Thr Gln Gln Ala Leu Thr
                165                 170                 175
Asp Arg Glu Pro Ile Gln Asn Ser Asn Cys Ser Pro Thr Leu Ser Val
            180                 185                 190
Thr Ile Phe Asn Lys Glu Ser Ser Ser Ser Ser Lys Lys Asp Ser Ala
        195                 200                 205
Ala Ser Arg Glu Gln Ser Ser Ser His Ser Ser Ser Leu Gln Lys Asn
    210                 215                 220
Leu Ser Ser Pro Arg Ala Ala Leu Leu Ser Pro Met Ala Leu Phe Glu
225                 230                 235                 240
Thr Thr Ala Gln Lys Glu Thr Leu Ala Arg Glu Gly Leu Leu His Glu
                245                 250                 255
Arg Glu Asp Leu Ser Gln Glu Gly Asp Arg Asp His His Gln Ser Asp
            260                 265                 270
Gln Gln Gln Glu Glu Lys Glu Asp Leu Ala Ile Ser Ala Ser Phe Leu
        275                 280                 285
Ser His Ser Lys Lys Arg Arg Glu His His Phe Asp Pro Glu Tyr Leu
    290                 295                 300
Pro Glu Glu Ile Arg Glu Phe Ala Leu Ser Glu Ala Gln Leu Ser Gln
305                 310                 315                 320
Leu Leu His Ile Arg Leu Asn His Leu Asp Ile Leu Arg Ile Cys Ala
                325                 330                 335
Glu Ile Met Lys Leu Met Leu Asn Ser Arg Glu Gln Asp Leu Leu Glu
            340                 345                 350
Arg Arg Ser Thr Arg Thr His Phe Met Gln Glu Ala Lys Lys Ile Ala
        355                 360                 365
Asp Ser Phe Ala Lys Gln Ala Arg Ile Thr Lys Trp Leu Gly Ile Ala
    370                 375                 380
Thr Ala Thr Leu Gly Ile Phe Gly Gly Ile Ser Pro Ile Ile Gly Glu
385                 390                 395                 400
Val Gly Gly Glu Gly Leu Leu Asn Val Ile Arg Lys Ala Thr Gly Gly
                405                 410                 415
Trp Gln Gln Ala Ser Ser Lys Thr Phe Phe Glu Gly Trp Gly Lys Cys
            420                 425                 430
Val Leu Ser Leu Ser Glu Leu Ala Lys Val Ser Ser Thr Val Tyr Asp
        435                 440                 445
Leu Arg Pro Lys Pro Val Arg Thr Ile Ala Glu Ser Tyr Lys Glu Leu
    450                 455                 460
Phe Arg Leu Glu His Asp Glu Met Leu Arg Ser Ile Glu Glu Leu Lys
465                 470                 475                 480
Asp His Gly Arg Asn Met Asp Ser Phe Leu Leu Gln Ile Leu Gln Thr
                485                 490                 495
Gln His Asp Ala Val Arg Ser Leu Tyr Gln
            500                 505
<210>507
<211>307
<212>PRT
<213>Chlamydia trachomatis
<400>507
Met Arg Lys Ile Ile Leu Cys Ser Pro Arg Gly Phe Cys Ala Gly Val
  1               5                  10                  15
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Ile Arg Ala Ile Gln Thr Val Glu Val Ala Leu Glu Lys Trp Gly Arg
            20                  25                  30
Pro Ile Tyr Val Lys His Glu Ile Val His Asn Arg His Val Val Asp
        35                  40                  45
Lys Leu Arg Glu Lys Gly Ala Ile Phe Ile Glu Asp Leu Gln Glu Val
    50                  55                  60
Pro Arg Asn Ser Arg Val Ile Phe Ser Ala His Gly Val Pro Pro Ser
65                  70                  75                  80
Leu Arg Glu Glu Ala Thr Glu Arg Gly Leu Ile Ala Ile Asp Ala Thr
                85                  90                  95
Cys Gly Leu Val Thr Lys Val His Ser Ala Val Lys Met Tyr Ala Lys
            100                 105                 110
Lys Gly Tyr His Ile Ile Leu Ile Gly Lys Arg Lys His Val Glu Ile
        115                 120                 125
Ile Gly Ile Arg Gly Glu Ala Pro Asp Gln Ile Thr Val Val Glu Asn
    130                 135                 140
Ile Ala Glu Val Glu Ala Leu Pro Phe Ser Ala Gln Asp Pro Leu Phe
145                 150                 155                 160
Tyr Val Thr Gln Thr Thr Leu Ser Met Asp Asp Ala Ala Asp Ile Val
                165                 170                 175
Ala Ala Leu Lys Ala Arg Tyr Pro Arg Ile Phe Thr Leu Pro Ser Ser
            180                 185                 190
Ser Ile Cys Tyr Ala Thr Gln Asn Arg Gln Gly Ala Leu Arg Asn Ile
        195                 200                 205
Leu Pro Gln Val Asp Phe Val Tyr Val Ile Gly Asp Arg Gln Ser Ser
    210                 215                 220
Asn Ser Asn Arg Leu Arg Glu Val Ala Glu Arg Arg Gly Val Thr Ala
225                 230                 235                 240
Arg Leu Val Asn His Pro Asp Glu Val Thr Glu Glu Ile Leu Gln Tyr
                245                 250                 255
Ser Gly Asn Ile Gly Ile Thr Ala Gly Ala Ser Thr Pro Glu Asp Val
            260                 265                 270
Val Gln Ala Cys Leu Met Lys Leu Gln Glu Leu Ile Pro Asp Leu Ser
        275                 280                 285
Ile Glu Met Asp Leu Phe Val Glu Glu Asp Thr Val Phe Gln Leu Pro
    290                 295                 300
Lys Glu Leu
305
<210>508
<211>352
<212>PRT
<213>Chlamydia trachomatis
<400>508
Phe Ala Ile Leu Leu Ser Asn Gly Ser Ala Phe Leu Gly Arg Ala Ser
  1                 5                  10                  15
Gln Ser Leu Cys Asn Glu Trp Phe Glu Lys Arg Val Gln Tyr Trp Glu
            20                  25                  30
Tyr Asp Gly Phe Leu Pro Val Ile Gly Pro Val Ile Trp Glu Ser Glu
        35                  40                  45
Gly Leu Phe Arg Ala Tyr Ile Ser Ser Val Thr Asp Gly Asp Gly Lys
    50                  55                  60
Ser His Lys Val Gly Phe Leu Arg Ile Pro Thr Tyr Ser Trp Gln Asp
65                  70                  75                  80
Met Glu Asp Phe Asp Pro Ser Gly Pro Pro Pro Trp Glu Glu Phe Ala
                85                  90                  95
Lys Ile Ile Gln Val Phe Ser Ser Asn Thr Glu Ala Leu Ile Ile Asp
            100                 105                 110
Gln Thr Asn Asn Pro Gly Gly Ser Val Leu Tyr Leu Tyr Ala Leu Leu
        115                 120                 125
Ser Met Leu Thr Asp Arg Pro Leu Glu Leu Pro Lys His Arg Met Ile
    130                 135                 140
```

Sequence Listing

```
Leu Thr Gln Asp Glu Val Val Asp Ala Leu Asp Trp Leu Thr Leu Leu
145                 150                 155                 160
Glu Asn Val Asp Thr Asn Val Glu Ser Arg Leu Ala Leu Gly Asp Asn
                165                 170                 175
Met Glu Gly Tyr Thr Val Asp Leu Gln Val Ala Glu Tyr Leu Lys Ser
            180                 185                 190
Phe Gly Arg Gln Val Leu Asn Cys Trp Ser Lys Gly Asp Ile Glu Leu
        195                 200                 205
Ser Thr Pro Ile Pro Leu Phe Gly Phe Glu Lys Ile His Pro His Pro
    210                 215                 220
Arg Val Gln Tyr Ser Lys Pro Ile Cys Val Leu Ile Asn Glu Gln Asp
225                 230                 235                 240
Phe Ser Cys Ala Asp Phe Phe Pro Val Val Leu Lys Asp Asn Asp Arg
                245                 250                 255
Ala Leu Ile Val Gly Thr Arg Thr Ala Gly Ala Gly Gly Phe Val Phe
            260                 265                 270
Asn Val Gln Phe Pro Asn Arg Thr Gly Ile Lys Thr Cys Ser Leu Thr
        275                 280                 285
Gly Ser Leu Ala Val Arg Glu His Gly Ala Phe Ile Glu Asn Ile Gly
    290                 295                 300
Val Glu Pro His Ile Asp Leu Pro Phe Thr Ala Asn Asp Ile Arg Tyr
305                 310                 315                 320
Lys Gly Tyr Ser Glu Tyr Leu Asp Lys Val Lys Lys Leu Val Cys Gln
                325                 330                 335
Leu Ile Asn Asn Asp Gly Thr Ile Ile Leu Ala Glu Asp Gly Ser Phe
            340                 345                 350
<210>509
<211>328
<212>PRT
<213>Chlamydia trachomatis
<400>509
Lys Gly Ser Leu Pro Ile Leu Gly Pro Phe Leu Asn Gly Lys Met Gly
  1                 5                  10                  15
Phe Trp Arg Thr Ser Ile Met Lys Met Asn Arg Ile Trp Leu Leu Leu
             20                  25                  30
Leu Thr Phe Ser Ser Ala Ile His Ser Pro Val Arg Gly Glu Ser Leu
         35                  40                  45
Val Cys Lys Asn Ala Leu Gln Asp Leu Ser Phe Leu Glu His Leu Leu
     50                  55                  60
Gln Val Lys Tyr Ala Pro Lys Thr Trp Lys Glu Gln Tyr Leu Gly Trp
 65                  70                  75                  80
Asp Leu Val Gln Ser Ser Val Ser Ala Gln Gln Lys Leu Arg Thr Gln
                 85                  90                  95
Glu Asn Pro Ser Thr Ser Phe Cys Gln Gln Val Leu Ala Asp Phe Ile
            100                 105                 110
Gly Gly Leu Asn Asp Phe His Ala Gly Val Thr Phe Phe Ala Ile Glu
        115                 120                 125
Ser Ala Tyr Leu Pro Tyr Thr Val Gln Lys Ser Ser Asp Gly Arg Phe
    130                 135                 140
Tyr Phe Val Asp Ile Met Thr Phe Ser Ser Glu Ile Arg Val Gly Asp
145                 150                 155                 160
Glu Leu Leu Glu Val Asp Gly Ala Pro Val Gln Asp Val Leu Ala Thr
                165                 170                 175
Leu Tyr Gly Ser Asn His Lys Gly Thr Ala Ala Glu Glu Ser Ala Ala
            180                 185                 190
Leu Arg Thr Leu Phe Ser Arg Met Ala Ser Leu Gly His Lys Val Pro
        195                 200                 205
Ser Gly Arg Thr Thr Leu Lys Ile Arg Arg Pro Phe Gly Thr Thr Arg
    210                 215                 220
Glu Val Arg Val Lys Trp Arg Tyr Val Pro Glu Gly Val Gly Asp Leu
225                 230                 235                 240
```

Ala Thr Ile Ala Pro Ser Ile Arg Ala Pro Gln Leu Gln Lys Ser Met
245 250 255
Arg Ser Phe Phe Pro Lys Lys Asp Asp Ala Phe His Arg Ser Ser Ser
260 265 270
Leu Phe Tyr Ser Pro Met Val Pro His Phe Trp Ala Glu Leu Arg Asn
275 280 285
His Tyr Ala Thr Ser Gly Leu Lys Ser Gly Tyr Asn Ile Gly Ser Thr
290 295 300
Met Gly Phe Ser Leu Ser Leu Gly Leu Leu Tyr Gly Ser Arg Arg Val
305 310 315 320
Phe Ser Ala Leu Ile Phe Leu Arg
325

<210>510
<211>427
<212>PRT
<213>Chlamydia trachomatis
<400>510
Val Leu Val Glu Val Phe Met Leu Lys Phe Gln Leu Cys Leu Leu Phe
1 5 10 15
Leu Phe Gly Tyr Leu Ala Ile Val Phe Glu His Ile Val Arg Val Asn
20 25 30
Lys Ser Ala Val Ser Leu Ala Met Gly Gly Leu Met Trp Leu Val Cys
35 40 45
Phe Ser His Ile Pro His Ile Asp His Val Met Met Val Glu Glu Ile
50 55 60
Ala Asp Met Ala Gln Val Ile Phe Phe Leu Phe Ala Ala Met Ala Ile
65 70 75 80
Val Glu Leu Ile Asp Ala His Arg Gly Phe Ser Ile Val Val Arg Cys
85 90 95
Cys Asn Val Glu Ser Arg Ser Val Leu Leu Trp Val Leu Leu Ile Leu
100 105 110
Ser Phe Phe Leu Ser Ala Ala Leu Asp Asn Leu Thr Ser Ile Ile Ile
115 120 125
Ile Ile Ser Ile Leu Lys Arg Leu Val Lys Ala Arg Glu Asp Arg Leu
130 135 140
Leu Leu Gly Ala Leu Cys Val Ile Gly Val Asn Ala Gly Gly Ala Trp
145 150 155 160
Thr Pro Leu Gly Asp Val Thr Thr Thr Met Leu Trp Ile Asn Asp Lys
165 170 175
Ile Ser Thr Ser Gly Ile Ile Thr Thr Leu Phe Leu Pro Ser Val Val
180 185 190
Cys Val Val Ile Ala Gly Ile Cys Gly Gln Leu Leu Leu Lys Lys Arg
195 200 205
Arg Cys Ser Gly Leu Ser Glu Asp Leu Asp Arg Glu Pro Ala Leu Pro
210 215 220
Lys Ser Asn Leu Ile Ala Cys Val Gly Phe Gly Ser Leu Leu Met Val
225 230 235 240
Pro Met Trp Lys Ala Val Leu Gly Val Pro Pro Phe Met Gly Ala Leu
245 250 255
Leu Gly Leu Gly Leu Val Trp Leu Val Ser Asp Trp Ile His Ser Pro
260 265 270
His Gly Glu Gly Arg Asn His Leu Arg Met Pro His Ile Leu Thr Arg
275 280 285
Ile Asp Ile Ser Ser Val Thr Phe Phe Ile Gly Ile Leu Leu Ala Val
290 295 300
Asn Ala Leu Thr Tyr Ser His Val Leu Arg Asp Leu Ser Val Ser Met
305 310 315 320
Asp Ala Leu Phe Ser Arg Asn Thr Leu Ala Val Leu Leu Gly Leu Val
325 330 335
Ser Ser Val Leu Asp Asn Val Pro Leu Val Ala Ala Thr Ile Gly Met
340 345 350

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```
Tyr Asp Leu Pro Met Asn Asp Pro Leu Trp Lys Leu Ile Ala Tyr Thr
        355                 360                 365
Ala Gly Thr Gly Gly Ser Ile Leu Ile Ile Gly Ser Ala Ala Gly Val
    370                 375                 380
Ala Tyr Met Gly Met Glu Lys Val Ser Phe Gly Trp Tyr Val Lys His
385                 390                 395                 400
Ala Ser Trp Ile Ala Leu Ala Ser Tyr Phe Gly Gly Leu Ala Val Tyr
                405                 410                 415
Phe Leu Met Glu Asn Cys Val Asn Leu Phe Val
            420                 425
<210>511
<211>416
<212>PRT
<213>Chlamydia trachomatis
<400>511
Leu Val Lys Val Ser Leu Ser Phe Lys His Leu Ile Pro Lys Leu Val
  1               5                  10                  15
Thr Cys Leu Lys Glu Gly Tyr Ser Phe Asn Thr Leu Lys Lys Asp Phe
             20                  25                  30
Thr Ala Gly Ile Thr Ala Gly Ile Leu Ala Phe Pro Leu Ala Ile Ala
         35                  40                  45
Ile Ala Ile Gly Ile Gly Val Ser Pro Leu Gln Gly Leu Leu Ala Ser
     50                  55                  60
Ile Ile Gly Gly Phe Leu Ala Ser Ala Leu Gly Gly Ser Arg Val Leu
 65                  70                  75                  80
Ile Ser Gly Pro Thr Ser Ser Phe Ile Ser Ile Leu Tyr Cys Ile Gly
                85                  90                  95
Val Lys Tyr Gly Glu Asp Gly Leu Phe Thr Ile Thr Leu Met Ala Gly
            100                 105                 110
Ile Phe Leu Val Ile Phe Gly Leu Ala Gly Leu Gly Thr Phe Ile Lys
        115                 120                 125
Tyr Met Pro Tyr Pro Val Val Thr Gly Leu Thr Thr Gly Ile Ala Val
    130                 135                 140
Ile Ile Phe Ser Ser Gln Ile Arg Asp Phe Leu Gly Leu Gln Met Gly
145                 150                 155                 160
Asp Gly Val Pro Leu Asp Phe Ile Gly Lys Trp Ala Ala Tyr Trp Asp
                165                 170                 175
Tyr Leu Trp Thr Trp Asp Ser Lys Thr Phe Ala Val Gly Leu Phe Thr
            180                 185                 190
Leu Leu Leu Met Ile Tyr Phe Arg Asn Tyr Lys Pro Arg Tyr Pro Gly
        195                 200                 205
Val Met Ile Ser Ile Ile Ile Ala Ser Thr Leu Val Trp Ile Leu Lys
    210                 215                 220
Ile Asp Ile Pro Thr Ile Gly Ser Arg Tyr Gly Thr Leu Pro Ser Ser
225                 230                 235                 240
Leu Pro Gly Pro Val Phe Pro His Ile Ser Ile Thr Lys Met Leu Gln
                245                 250                 255
Leu Met Pro Asp Ala Leu Thr Ile Ser Val Leu Ser Gly Ile Glu Thr
            260                 265                 270
Leu Leu Ala Ala Val Val Ala Asp Gly Met Thr Gly Trp Arg His Gln
        275                 280                 285
Ser Asn Cys Gln Leu Ile Gly Gln Gly Ile Ala Asn Ile Gly Thr Ser
    290                 295                 300
Leu Phe Ala Gly Met Pro Val Thr Gly Ser Leu Ser Arg Thr Thr Ala
305                 310                 315                 320
Ser Ile Lys Cys Gly Ala Ser Thr Pro Ile Ala Gly Ile Ile His Ala
                325                 330                 335
Ile Cys Leu Ser Phe Ile Leu Leu Leu Leu Ala Pro Leu Thr Ile Lys
            340                 345                 350
Ile Pro Leu Thr Cys Leu Ala Ala Val Leu Ile Leu Ile Ala Trp Asn
        355                 360                 365
```

Sequence Listing

Sequence Listing

```
Met Ser Glu Ile His His Phe Ile His Leu Phe Thr Ala Pro Lys Lys
    370                 375                 380
Asp Val Leu Val Leu Leu Thr Val Phe Ile Leu Thr Val Met Thr Thr
385                 390                 395                 400
Ile Thr Ser Ala Val Gln Val Gly Met Ile Leu Gln Pro Phe Tyr Ser
                405                 410                 415
<210>512
<211>147
<212>PRT
<213>Chlamydia trachomatis
<400>512
Ala Ile Tyr Leu Met Leu Ser Pro Gln Gln Asn Ile Leu Met Asn Pro
  1               5                  10                  15
Asn Asn Leu Lys Met Thr Cys Tyr Phe Ser Lys Asn Glu Val Pro Pro
             20                  25                  30
Phe Thr Glu Ile Tyr Glu Ile Asn Gly Pro Phe Phe Phe Gly Ile Ala
         35                  40                  45
Asp Arg Leu Lys Asn Leu Leu Asn Glu Ile Glu Lys Pro Pro Lys Ile
     50                  55                  60
Phe Ile Leu Cys Met Thr Arg Val Pro Thr Ile Asp Ala Ser Ala Met
 65                  70                  75                  80
His Ala Leu Glu Glu Phe Phe Leu Glu Cys Asp Arg Gln Gly Thr Leu
                85                  90                  95
Leu Leu Leu Ala Gly Val Lys Lys Thr Pro Leu Ser Asp Leu Arg Arg
            100                 105                 110
Tyr His Val Asp Glu Leu Ile Gly Val Asp His Ile Phe Ser Asn Ile
        115                 120                 125
Lys Gly Ala Leu Leu Phe Ala Lys Ala Leu Ile Lys Leu Glu Ser Lys
    130                 135                 140
Ser Ser Gln
145
<210>513
<211>252
<212>PRT
<213>Chlamydia trachomatis
<400>513
Ser Phe Arg Val Cys Ser Arg Tyr Lys Asn Trp Lys Asn Ala Phe Asp
  1               5                  10                  15
Gly Cys Ser Ser Asn Asp Ser Trp Ala Lys Glu Phe Ser Gly Tyr Ser
             20                  25                  30
Cys Gln Leu His Asn Cys Leu Glu Arg Ile Gly Phe Ser Leu Thr His
         35                  40                  45
Leu Tyr Glu Leu Ala Ile Gly Gly Thr Ala Ile Gly Thr Gly Leu Asn
     50                  55                  60
Val Pro Glu Gly Phe Val Glu Lys Val Ile Gln Tyr Leu Arg Arg Glu
 65                  70                  75                  80
Thr Gly Glu Pro Phe Val Pro Ala Ser Asn Tyr Phe Ala Ala Leu Ser
                85                  90                  95
Asn His Asp Ala Leu Val Gln Ala His Gly Ser Leu Thr Val Leu Ala
            100                 105                 110
Cys Ala Leu Val Lys Ile Ala Thr Asp Leu Ser Xaa Leu Gly Ser Gly
        115                 120                 125
Pro Arg Cys Gly Leu Gly Glu Ile Phe Phe Pro Glu Asn Glu Pro Gly
    130                 135                 140
Ser Ser Ile Met Pro Gly Lys Ile Asn Pro Thr Gln Ser Glu Ala Leu
145                 150                 155                 160
Gln Met Val Cys Ser Gln Val Ile Gly Asn Asn Gln Ser Ile Ile Phe
                165                 170                 175
Ser Gly Thr Lys Gly Asn Phe Glu Leu Asn Val Met Lys Pro Val Ile
            180                 185                 190
Ile Tyr Asp Phe Leu Gln Ser Val Asn Leu Leu Ala Gly Ala Met Arg
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        195                 200                 205
Ser Phe Ala Asp Cys Phe Val Cys Gly Leu Lys Val Asn Lys Gly Gln
    210                 215                 220
Leu Gln Gln Asn Val Glu Arg Ser Leu Met Leu Val Thr Ala Leu Val
225                 230                 235                 240
Pro Phe Trp Gly Thr Ile Asn Val Gln Arg Leu Leu
                245                 250
<210>514
<211>100
<212>PRT
<213>Chlamydia trachomatis
<400>514
Thr Ile Met Gln Leu Thr Thr Ile Pro Arg Lys Leu Phe Cys Pro Arg
  1               5                  10                  15
Val Ile Gly Thr Thr Ser Ile Lys Cys Val Leu Pro Ile Phe Ile Ser
             20                  25                  30
Arg Ala Asn Ser Lys Ala Leu Ala Ser Thr Thr Phe Phe Lys Cys Ser
         35                  40                  45
Asn Thr Gly Ile Lys Asp Pro Phe Ile Leu Cys Thr Ala Ala Ile Cys
     50                  55                  60
Ile Ala Val Gly Lys Thr Ser Phe Glu Asp Trp Val Tyr Ser Arg Asp
 65                  70                  75                  80
His Trp Asp Ala Arg Asp Val Tyr Phe Gln Ala Leu Pro His Asp Ala
                85                  90                  95
Glu Leu Leu Asn
            100
<210>515
<211>146
<212>PRT
<213>Chlamydia trachomatis
<400>515
Met Arg Gln Glu Asn Asp Ser Leu Gly Ile Val Leu Val Pro Glu Asp
  1               5                  10                  15
Lys Leu Phe Gly Ala Gln Thr Gly Xaa Ser Gln Glu Phe Phe Ser Tyr
             20                  25                  30
Gly Lys Glu Ser Met Pro Leu Glu Ile Ile His Ala Leu Val Lys Ile
         35                  40                  45
Lys Lys Cys Ala Ala Lys Ala Asn Gly Asp Leu Gly Cys Leu Asp Ala
     50                  55                  60
Lys Arg Arg Asp Met Ile Val Ala Ala Thr Asp Glu Ile Leu Ser Gly
 65                  70                  75                  80
Glu Phe Asp Glu His Phe Pro Leu Lys Val Trp Gln Thr Gly Ser Gly
                85                  90                  95
Thr Gln Ser Asn Met Asn Val Asn Glu Val Ile Ala Asn Leu Ala Ile
            100                 105                 110
Gln Arg His Gly Gly Glu Leu Gly Ser Lys His Pro Val His Pro Asn
        115                 120                 125
Asp His Val Asn Lys Pro Ser Pro Gln Met Met Phe Ser Gln Arg Gln
    130                 135                 140
Cys Ile
145
<210>516
<211>364
<212>PRT<213>Chlamydia trachomatis
<400>516
Met Ala Met Ala Leu Ala Gly Leu Phe Val Leu Thr Val Leu Thr Leu
  1               5                  10                  15
Ser Leu Phe Tyr Ser Val Leu Leu Leu Glu Arg Ser Thr Phe Phe Phe
             20                  25                  30
Phe Arg Met Glu Lys Thr Ser Lys Arg Ser Phe Gly Lys Lys Trp Val
         35                  40                  45
```

Sequence Listing

```
Phe Ala Leu Ile Pro Ile Thr Val Leu Pro Cys Leu Phe Tyr Leu Lys
     50                  55                  60
Asp Asp Pro Lys Leu Ala Ala Pro Val Pro Thr Lys Ser Phe Thr Leu
 65                  70                  75                  80
Leu Leu Asp Trp Thr Pro Asn Pro Asn His Ile Pro Leu Tyr Val Gly
                 85                  90                  95
Val Glu Lys Gly Phe Phe Val Asp Glu Gly Ile Ser Leu Thr Leu Gln
            100                 105                 110
Lys Asn Thr Asp Thr Cys Ser Ser Ile Pro His Leu Leu Leu Glu Lys
        115                 120                 125
Val Asp Tyr Thr Leu Tyr His Ser Leu Gly Val Leu Lys Thr Ala Val
    130                 135                 140
Arg Gly Ala Pro Val Gln Val Ala Gly Arg Leu Ile Asp Ser Ser Leu
145                 150                 155                 160
Gln Gly Leu Ile Tyr Arg Lys Asn Glu Gly Val Glu Lys Leu Glu Asp
                165                 170                 175
Leu Asn Gly Arg Val Leu Gly Phe Cys Leu Asn Asp Ser Lys Asn Leu
            180                 185                 190
Pro Asn Leu Leu Glu Ala Leu Arg Lys His His Val Val Pro Ser Glu
        195                 200                 205
Ile Lys Asn Val Ser Ala Asp Met Ile Ser Pro Met Leu Thr Tyr Gln
    210                 215                 220
Ile Asp Phe Leu Tyr Gly Gly Phe Tyr Asn Val Glu Gly Val Thr Ile
225                 230                 235                 240
Ala Leu Lys Gly Thr Pro Thr Gly Cys Phe Leu Ser Asp Thr Tyr Gly
                245                 250                 255
Ser Pro Thr Gly Pro Gln Leu Leu Ile Cys Gly Lys Lys Gly Ser Pro
            260                 265                 270
Ala Met Thr Pro Gln Thr Leu Gln Ser Leu Gln Lys Ala Leu Ser Arg
        275                 280                 285
Ser Leu Asp Phe Cys Arg Glu Tyr Pro Gln Glu Ala Phe Ala Ile Tyr
    290                 295                 300
Val Glu Ala Thr Lys Asp Ser Pro Lys Val Leu Ser Asp Glu Gln Ala
305                 310                 315                 320
Gln Trp Glu Val Thr Leu Pro Leu Leu Ala Lys Thr Gln Glu Pro Leu
                325                 330                 335
Ser Arg Glu Leu Leu Glu Ser Leu Leu Val Thr Leu Ser Thr Thr Cys
            340                 345                 350
Pro Asp Leu Gln Ala Ser Ile Asp Thr Phe Phe Tyr
        355                 360
<210>517
<211>163
<212>PRT
<213>Chlamydia trachomatis
<400>517
Lys Lys Gln Ser Ala Ala Ser Leu Glu Gly Lys Ser Phe Cys Ser Ser
  1                 5                  10                  15
Arg Val Phe Cys Ser Leu Ser Ser Ile Ile Arg Ala Pro Leu Leu Phe
             20                  25                  30
Ala Asn Thr Ser Met Arg Ser Thr Val Val Gly Gly Cys Gly Val Met
         35                  40                  45
Phe Thr Gly Met Arg Ala Ile Leu Arg Asn Thr Gln Ala Ser Leu Trp
     50                  55                  60
Ser Lys Ile Pro Ser Leu Ser Gln Ser Pro Lys Val Ala Pro Ile Ala
 65                  70                  75                  80
Leu Pro Leu Met Ile Gly Pro Ser Trp Leu Cys Ala Cys Ala Pro Leu
                 85                  90                  95
Ala Met Gln Gln Leu Pro Phe Ser Ile Val Cys Ala Leu Leu Cys Leu
            100                 105                 110
Ser Trp Leu Met Met Thr Ile Thr Thr Ile Val Leu Gln Thr Ala Asn
        115                 120                 125
```

```
Lys Ala Gly Ser Gln Thr Ile Ile Ala Thr Gln Thr Ile Leu Gly Leu
    130                 135                 140
Ala Val Val Ile Val Gly Ala Gln Leu Leu Val Ser Gly Leu Gln Gln
145                 150                 155                 160
Thr Phe Leu
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<210>518
<211>213
<212>PRT
<213>Chlamydia trachomatis
<400>518

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Met Leu His Ser Leu Phe Arg Leu Thr Leu Leu Phe Tyr Ala Leu Phe
  1               5                  10                  15
Asn Ala Leu Gly Ser Leu Pro Val Phe Ile Ala Leu Leu Lys Asn Phe
             20                  25                  30
Ser Phe Lys Lys Gln Gln Arg Ile Ile Leu Arg Glu Ser Ile Phe Ala
         35                  40                  45
Leu Leu Leu Leu Leu Leu Phe Val Thr Phe Gly Arg Gly Phe Phe Arg
     50                  55                  60
Leu Leu Gly Ile Thr Leu Pro Ala Phe Gln Phe Thr Gly Gly Leu Leu
 65                  70                  75                  80
Leu Gly Ser Ile Ala Ile Asp Met Met Lys Ala Leu Pro Ser Gln Ser
                85                  90                  95
Glu Thr Leu Glu Lys Asp Lys Asp Glu Pro Val Phe Phe Pro Leu Ala
            100                 105                 110
Phe Pro Val Ile Thr Gly Pro Ala Met Ile Thr Ser Thr Leu Gly His
        115                 120                 125
Met Glu Glu Gly Ile Phe Pro Lys Glu Ile Val Leu Gly Ala Ile Val
    130                 135                 140
Leu Ala Trp Leu Phe Ser Leu Ile Thr Leu Leu Phe Ser Ser Ser Ile
145                 150                 155                 160
Asn Arg Leu Phe Gly Gln Met Gly Leu Leu Ala Leu Glu Arg Leu Phe
                165                 170                 175
Gly Ile Ser Leu Ala Leu Met Ala Gly Asn Leu Met Leu Lys Ala Leu
            180                 185                 190
Ser Thr Ala Phe Asn Ile Gly Tyr Tyr Met Leu His Leu Lys Ala Leu
        195                 200                 205
Leu Tyr Val Lys Arg
    210
```

<210>519
<211>237
<212>PRT
<213>Chlamydia trachomatis
<400>519

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Ser Leu Pro Ser Tyr Ser Ser Tyr Ser Arg Cys Phe Met Arg Xaa Ala
  1               5                  10                  15
Lys Glu Gly Val Thr Thr Asn Glu Leu Asp Leu Leu Ser Arg Glu Leu
             20                  25                  30
His Lys Arg His Asn Ala Ile Pro Ala Pro Leu Asn Tyr Gly His Pro
         35                  40                  45
Pro Phe Pro Lys Thr Ile Cys Thr Ser Leu Asn Glu Val Ile Cys His
     50                  55                  60
Gly Ile Pro Asn Asp Ile Pro Leu Gln Asn Gly Asp Ile Met Asn Ile
 65                  70                  75                  80
Asp Val Ser Cys Ile Val Asp Gly Phe Tyr Gly Asp Cys Ser Arg Met
                85                  90                  95
Val Met Ile Gly Glu Val Ser Glu Ile Lys Arg Lys Val Cys Glu Ala
            100                 105                 110
Ser Leu Glu Ala Leu Asn Ala Ala Ile Ser Ile Leu Glu Pro Asn Leu
        115                 120                 125
Pro Leu Tyr Glu Ile Gly Glu Val Ile Glu Asn Cys Ala Ala Lys Tyr
```

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```
    130                 135                 140
Gly Phe Ser Val Val Asp Gln Phe Val Gly His Gly Val Gly Val Lys
145                 150                 155                 160
Phe His Glu Asn Pro Phe Val Ala His His Arg Asn Ser Cys Lys Ile
                165                 170                 175
Pro Leu Ala Pro Gly Met Ile Phe Thr Ile Glu Pro Met Ile Asn Val
            180                 185                 190
Gly Lys Lys Glu Gly Phe Ile Asp Pro Ile Asn His Trp Glu Ala Arg
        195                 200                 205
Thr Cys Asp His Gln Pro Ser Ala Gln Trp Glu His Ala Ile Leu Ile
    210                 215                 220
Thr Asp Ser Gly Cys Glu Val Leu Thr Leu Leu Asp Lys
225                 230                 235
<210>520
<211>411
<212>PRT
<213>Chlamydia trachomatis
<400>520
Thr Lys Lys Arg Val Leu Met Gly Phe Gly Thr Val Arg Gly Lys Gly
  1               5                  10                  15
Lys Ala Val Lys Ser Phe Phe Leu Arg Pro Leu Gln Asn Leu Glu Val
            20                  25                  30
Gly Leu Phe Ser Leu Pro Ile Val Leu Leu Leu Gly Glu Ile Gly Cys
        35                  40                  45
Val Ser Ser Ile Ser Ser Val Ser Leu Val Ala Val Leu Ser Ile Val
    50                  55                  60
Gly Val Phe Val Ala Leu Val Ser Phe Phe Arg Ser Trp Gly Tyr Gly
65                  70                  75                  80
Leu Ser Val Val Gly Ala Ile Phe Phe Gly Leu Ala Leu Cys Asn Asn
                85                  90                  95
Phe Pro Val Ser Val Phe Trp Gly Gly Leu Leu Thr Val Ser Phe Ile
            100                 105                 110
Ile Ser Tyr Gly Ile Leu Leu Leu Ser Val Ser Leu Val Glu Gly His
        115                 120                 125
Ile Lys Glu Lys Ala Val Ser Leu Ser Glu Leu Thr Ala Ser His Asn
    130                 135                 140
Ser Leu Gln Asp Ser Tyr Asn Arg Glu Val Gln Glu Arg Lys Glu Lys
145                 150                 155                 160
Glu Leu Leu Ala Gln Ser Lys Ile Thr Ala Leu Glu Gln Glu Leu Ser
                165                 170                 175
Val Ser His Glu Gln Leu Gln Glu Val Ser Arg Lys Tyr Thr His Thr
            180                 185                 190
Ser Glu Asp Leu Gln Ile Leu Ile Asp Gln Arg Asp Ser Trp Leu Lys
        195                 200                 205
Asp Tyr Met Thr Leu His Gln Glu Tyr Val Arg Val Val Ala Gly Asp
    210                 215                 220
Glu Glu Asn Val Ile Phe Pro Trp Lys Val Phe Gln Gly Asn Ser Glu
225                 230                 235                 240
Lys Asp Ser Gly Tyr Gln Gln Arg Val Gln Asp Ala Glu His Lys Ile
                245                 250                 255
Ala His Leu Glu Lys Leu Cys Glu Glu Glu Asn Ser Gly Lys Arg Tyr
            260                 265                 270
Ala Glu Glu Cys Leu Asp Lys Ala Leu Ala Asp Leu Leu Glu Ser Thr
        275                 280                 285
Arg Leu Arg Glu Ile Leu Glu Lys Glu Ile Phe Gln Lys Asp Glu Glu
    290                 295                 300
Ile Ala Ser Leu Lys Gln Glu Ile Ala Ala Glu Lys Leu Leu Ser Ser
305                 310                 315                 320
Ser Val Ser Asp Asp Arg Ala Ala Tyr Lys Gly Lys Tyr Leu Gln Leu
                325                 330                 335
Arg Glu Gln Phe Thr Val Lys Asp Ser Phe Leu Lys Lys Ala Arg Arg
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            340                 345                 350
Glu Arg Phe Leu Ala Gln Glu Gln Leu Leu Val Leu Lys Arg Ala Lys
        355                 360                 365
Glu Glu Glu Ala Leu Asn Leu Ser Thr Thr Asp Ser Phe Ser Ile Ile
    370                 375                 380
Gln Asn Leu Leu Leu Gln Ile Glu Ala Leu Glu Glu Glu Val Thr Tyr
385                 390                 395                 400
Leu Glu Glu Leu Val Leu His Asn Gln Asn Arg
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<400>521
Asn Met Ser Ala Pro Thr Ser Gln Val Gly Asp Thr Gln Tyr Val Ser
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Ser Leu Pro Pro Leu Glu Pro Leu Gly Thr Pro Pro Ile Ala Glu Leu
             20                  25                  30
Leu Phe Ser Ile Tyr Ser Leu Leu Leu Glu Ala Val Glu Ile Arg Gln
         35                  40                  45
Glu Thr Ile Leu Thr Gln Ser Lys Gln Leu Asn Asp Asn Thr Asn Ile
     50                  55                  60
Gln Gln Gln Leu Asn Gln Glu Thr Asn Gln Ile Lys Tyr Ala Val Val
 65                  70                  75                  80
Gly Ser Gly Ala Lys Glu Asp Glu Asn His Thr Ser Thr Lys Pro Glu
                85                  90                  95
Pro Lys Leu Phe Cys Thr Thr Leu Lys Tyr Pro Arg Pro Ile Ser Asn
            100                 105                 110
Cys Pro Thr Lys Trp Thr Asp Tyr Pro Leu Ser Arg Ile Tyr Lys His
        115                 120                 125
Gln His Tyr Ala Ala Asn Arg Ser Thr Glu Leu Leu Leu His Gln Asn
    130                 135                 140
Ile Glu Leu Arg Gly Lys His Ser
145                 150
<210>522
<211>92
<212>PRT
<213>Chlamydia trachomatis
<400>522
Thr Lys Lys Arg Ile Lys Ser Asn Thr Leu Ser Leu Ala Leu Glu Leu
  1               5                  10                  15
Lys Lys Thr Lys Ile Thr Arg Val Gln Asn Gln Asn Gln Asn Tyr Ser
             20                  25                  30
Ala Gln Arg Ser Asn Ile Gln Asp Gln Leu Val Thr Ala Arg Gln Asn
         35                  40                  45
Gly Gln Ile Ile Leu Ser His Ala Ser Thr Asn Ile Asn Ile Met Gln
     50                  55                  60
Gln Ile Ala Gln Gln Asn Ser Ser Phe Ile Lys Thr Leu Asn Ser Val
 65                  70                  75                  80
Gly Ser Thr Val Asn Gln Leu Asn Lys Pro Leu Ser
                85                  90
<210>523
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<213>Chlamydia trachomatis
<400>523
Ile Tyr Thr Thr Ile Pro Lys Asn Gln Val Asn Ser Gln Asn Ser Ser
  1               5                  10                  15
Tyr Leu Gln Asn Val Gln Ser Val Asn Gln Ala Val Gly Ala Ser Arg
             20                  25                  30
Gln Ala Ile Gln Asn Gln Ile Ser Gly Leu Gly Asn Ala Ser Gln Val
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          35                  40                  45
Ile Ser Ser Asn Leu Asn Thr Asn Asn Asn Ile Ile Gln Gln Ser Leu
     50                  55                  60
Gln Val Gly Gln Ala Leu Ile Gln Thr Phe Ser Gln Ile Val Ser Leu
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Ile Ala Asn Ile
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<210>524
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<213>Chlamydia trachomatis
<400>524

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Arg Gly Tyr Pro Met Ser Ser Ala Ile Ile Pro Thr Leu Pro Glu Lys
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Asn Thr Val Ile Pro Asp Ser Thr Leu Ile Glu Pro Thr Ser Ile Glu
             20                  25                  30
Ile Asn Lys Lys Ser Ala Met Tyr Phe Cys Ile Ala Val Met Leu Lys
         35                  40                  45
Leu Ser Val Ala Thr Thr Asp Tyr Ser His Ala Ile Met Ala Val Leu
     50                  55                  60
Gln Glu Asn Thr Leu Glu Gln Gln Arg Lys Thr Lys Glu Leu Ile Asn
 65                  70                  75                  80
Ile Pro Leu Leu Tyr Val Pro Asp Leu Ile Lys Lys Asn Gly Ser Asp
                 85                  90                  95
Asp Glu Tyr Thr Asn His Ser Thr Ile Gln Ala Phe Gln Thr Ser Asn
            100                 105                 110
Gln Gln Ile Thr Ala Asn Arg Glu Leu Ile Gln Gln Glu Leu Ser Ala
        115                 120                 125
Ala Gln Gln Arg Ala Gln Ala Asn Gln Lys Ser Val Asn Ala Thr Ser
    130                 135                 140
Thr Glu Ser Met Lys Ile Leu Gln Ala Val Ser Ala Leu Leu Thr Ser
145                 150                 155                 160
Leu Ile Asp Leu Thr Ile Lys Ala Asn Leu Thr Thr Ser Leu Arg Thr
                165                 170                 175
Asn Ile Leu Gly Cys Thr Gly Phe Pro Met His Pro Asn Asn Lys Pro
            180                 185                 190
Cys Glu Thr Lys Gly Arg Leu Thr Ala Lys Asn Arg Ala
        195                 200                 205
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<213>Chlamydia trachomatis
<400>525

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Pro Lys Thr Ala Ser Leu Leu Val Leu Val Thr Ser Cys Ser Ala Pro
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Ser Ile Ala Phe Phe Leu Gln Tyr Phe Phe Gln Val Arg Gly Pro Ile
         35                  40                  45
Glu Trp Leu Ala Leu Ser Val Lys Gly Ile His Gln His Tyr Phe Trp
     50                  55                  60
Gln Trp Leu Thr Tyr Pro Leu Val Thr Ala Asp Thr Leu Lys Leu Gly
 65                  70                  75                  80
Asp Leu Arg Ser Leu Glu Ile Thr Gln Arg Leu Leu Met Arg Asn Val
                 85                  90                  95
Leu Asp Phe Ile Leu Phe Tyr Lys Ala Thr Asp Val Ile Ile Arg Lys
            100                 105                 110
Leu Gly Thr Gly Ser Phe Val Phe Leu Leu Thr Thr Gln Val Ser Ile
        115                 120                 125
Ala Gly Ile Ser Ile Trp Ala Phe Leu Trp Leu Ile Gly Ser Thr Gln
    130                 135                 140
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Ala Phe Phe Gly Pro Glu Ser Leu Ile Cys Ala Leu Leu Ile Val Arg
145                 150                 155                 160
Val Phe Leu Asp Pro Glu Lys Arg Leu Thr Leu Pro Leu Phe Pro Ile
                165                 170                 175
Ser Leu Ser Arg Lys Trp Ser Phe Val Leu Leu Leu His Phe Tyr Phe
            180                 185                 190
Leu Ile Leu Ile Leu Ser Gly Ala Tyr Ala Ile Leu Leu Gly Ser Val
        195                 200                 205
Leu Ser Met Ala Leu Ala Ile Cys Phe Cys Tyr Lys Glu Asn Ile Pro
    210                 215                 220
Asn Pro Tyr Arg Gly Ser Tyr Arg
225                 230
<210>526
<211>176
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<213>Chlamydia trachomatis
<400>526
Met Gln Glu Asn Leu Phe Tyr Arg Val Ile Ala Asn Phe Met Cys Ile
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Glu Lys Asp Leu Phe Phe Met Lys Lys Ala Leu Asp Glu Ala Arg Lys
            20                  25                  30
Ala Tyr Glu Gln Asp Glu Val Pro Val Gly Cys Ile Ile Val His Gly
        35                  40                  45
Asp Lys Ile Ile Ala Arg Gly His Asn Ser Val Glu Gln Leu Lys Asp
    50                  55                  60
Pro Thr Ala His Ala Glu Met Ile Cys Ile Ser Ala Ala Ala Glu Tyr
65                  70                  75                  80
Leu Glu Asn Trp Arg Leu Lys Asp Thr Ile Leu Tyr Cys Thr Leu Glu
                85                  90                  95
Pro Cys Leu Met Cys Ala Gly Ala Ile Gln Leu Ala Arg Ile Pro Arg
            100                 105                 110
Ile Val Trp Gly Ala Pro Asp Leu Arg Leu Gly Ala Gly Gly Ser Trp
        115                 120                 125
Leu Asn Val Phe Leu Glu Lys His Pro Phe His Gln Val Glu Cys Cys
    130                 135                 140
Ser Gly Val Cys Tyr Gln Glu Ser Glu Gln Leu Met Lys Asn Phe Phe
145                 150                 155                 160
Leu Glu Lys Arg Lys Ala Lys Asp Glu Gly Arg Asn Ser Arg Ala Thr
                165                 170                 175
<210>527
<211>95
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<213>Chlamydia trachomatis
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Tyr Leu Arg Arg His Arg Met Ser Leu Asp Lys Gly Thr Lys Glu Glu
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Ile Thr Lys Lys Phe Gln Leu His Glu Lys Asp Thr Gly Ser Ala Asp
            20                  25                  30
Val Gln Ile Ala Ile Leu Thr Glu His Ile Thr Glu Leu Lys Glu His
        35                  40                  45
Leu Lys Arg Ser Pro Lys Asp Gln Asn Ser Arg Leu Ala Leu Leu Lys
    50                  55                  60
Leu Val Gly Gln Arg Arg Lys Leu Leu Glu Tyr Leu Asn Ser Thr Asp
65                  70                  75                  80
Thr Glu Arg Tyr Lys Asn Leu Ile Ala Arg Leu Asn Leu Arg Lys
                85                  90                  95
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<213>Chlamydia trachomatis
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Asp Asn Ser Met Ala Phe Glu Thr Phe Ser Val Ala Leu Asp Lys Asp
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Lys Thr Leu Ile Phe Glu Thr Gly Lys Ile Ala Arg Gln Ala Ser Gly
20 25 30
Ala Val Leu Val Lys Met Asn Glu Thr Trp Val Phe Ser Ser Ala Cys
35 40 45
Ala Ala Ser Leu Ser Glu Ala Val Gly Phe Leu Pro Phe Arg Val Asp
50 55 60
Tyr Gln Glu Lys Phe Ser Ser Ala Gly Arg Thr Ser Gly Gly Phe Leu
65 70 75 80
Lys Arg Glu Gly Arg Pro Ser Glu Arg Glu Ile Leu Val Ser Arg Leu
85 90 95
Ile Asp Arg Ser Leu Arg Pro Ser Phe Pro Asn Arg Leu Met Gln Asp
100 105 110
Ile Gln Val Leu Ser Tyr Val Trp Ser Tyr Asp Gly Lys Thr Leu Pro
115 120 125
Asp Pro Pro Ser Leu Phe Ala Glu Leu Leu Pro Leu
130 135 140

<210>529
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<212>PRT
<213>Chlamydia trachomatis
<400>529
Val Pro Pro Ser Leu Asp Leu Val Met Ala Gly Thr Ala Ser Ala Val
1 5 10 15
Leu Met Ile Glu Gly His Cys Asp Phe Leu Thr Glu Glu Gln Val Leu
20 25 30
Glu Ala Ile Ala Phe Gly Gln Thr Tyr Ile Ala Lys Ile Cys Asp Ala
35 40 45
Ile Glu Ala Trp Gln Lys Ala Ile Gly Lys Gln Lys Asn Phe Ser Ala
50 55 60
Val Leu Asp Met Pro Glu Asp Val Gln Asn Val Val Ser Asp Phe Ile
65 70 75 80
Arg Glu Lys Phe Glu Lys Ala Leu Ser Phe Arg Asp Lys Glu Ala Leu
85 90 95
Glu Gln Ala Ser Lys Glu Leu Glu Glu Ser Val Ile Ala Asn Leu Val
100 105 110
Gln Glu Glu Asn Ser Asp Phe Ser Leu Leu Asn Val Lys Ala Ala Phe
115 120 125
Lys Thr Ala Lys Ser Asn Gln Met Arg Ala Leu Ile Gln Asp Leu Gly
130 135 140
Ile Arg Val Asp Gly Arg Thr Thr Thr Glu Ile Arg Pro Ile Ser Ile
145 150 155 160
Glu Thr Pro Leu Leu Pro Arg Thr His Gly Ser Cys Leu Phe Thr Arg
165 170 175
Gly Glu Thr Gln Ser Met Ala Val Cys Thr Leu Gly Gly Glu Asn Met
180 185 190
Ala Gln Asp Ser Lys Ile
195

<210>530
<211>307
<212>PRT
<213>Chlamydia trachomatis
<400>530
Lys Val Gly Arg Ile Gly Ser Pro Gly Arg Arg Glu Ile Gly His Gly
1 5 10 15
Lys Leu Ala Glu Xaa Ala Leu Ser His Val Leu Pro Glu Thr Ser Arg
20 25 30
Phe Pro Tyr Ile Ile Arg Leu Glu Ser Asn Ile Thr Glu Ser Asn Gly
35 40 45
Ser Ser Ser Met Ala Ser Val Cys Gly Gly Cys Leu Ala Leu Met Asp

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     50                  55                  60
Ala Gly Val Pro Ile Lys Ala Pro Val Ala Gly Ile Ala Met Gly Leu
 65                  70                  75                  80
Ile Leu Asp Arg Asp Gln Ala Ile Ile Leu Ser Asp Ile Ser Gly Ile
                85                  90                  95
Glu Asp His Leu Gly Asp Met Asp Phe Lys Val Ala Gly Thr Ala Lys
            100                 105                 110
Gly Ile Thr Ala Phe Gln Met Asp Ile Lys Ile Glu Gly Ile Thr His
        115                 120                 125
Lys Ile Met Glu Gln Ala Leu Ala Gln Ala Lys Gln Gly Arg Ser His
    130                 135                 140
Ile Leu Asn Leu Met Thr Gln Val Leu Ala Ser Pro Lys Gly Thr Val
145                 150                 155                 160
Ser Lys Tyr Ala Pro Arg Ile Glu Thr Met Gln Ile Asn Thr Ser Lys
                165                 170                 175
Ile Ala Thr Val Ile Gly Pro Gly Gly Lys Gln Ile Arg Gln Ile Ile
            180                 185                 190
Glu Arg Ser Gly Ala Gln Val Asp Ile Asn Asp Asp Gly Val Ile Asn
        195                 200                 205
Ile Ala Ala Ser Thr Gln Glu Ser Ile Asn Lys Ala Lys Glu Leu Ile
    210                 215                 220
Glu Gly Leu Thr Gly Glu Val Glu Val Gly Lys Val Tyr Asn Gly Arg
225                 230                 235                 240
Val Thr Ser Ile Ala Thr Phe Gly Val Phe Val Glu Val Leu Pro Gly
                245                 250                 255
Lys Glu Gly Leu Cys His Ile Ser Glu Leu Ser Lys Gln Lys Val Asp
            260                 265                 270
Asn Ile Ser Asp Phe Val Lys Glu Gly Asp Lys Leu Ala Val Lys Leu
        275                 280                 285
Leu Ser Ile Asn Glu Lys Gly Gln Leu Lys Leu Ser His Lys Ala Thr
    290                 295                 300
Leu Glu Asp
305
<210>531
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<213>Chlamydia trachomatis
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Pro Val Leu Ile Ser Leu Lys Cys Leu Leu Gly Leu Glu Gln Val Glu
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Ser Glu Ile Cys Ser Ser Arg Arg Ser Val Met Leu Leu Gly Ile Ile
             20                  25                  30
Phe Ile Asp Glu Ile Asp Ala Val Gly Arg His Arg Gly Ala Gly Ile
         35                  40                  45
Gly Gly Gly His Asp Glu Arg Glu Gln Thr Leu Asn Gln Leu Leu Val
     50                  55                  60
Glu Met Asp Gly Phe Gly Thr Asn Glu Gly Val Ile Leu Met Ala Ala
 65                  70                  75                  80
Thr Asn Arg Pro Asp Val Leu Asp Lys Ala Leu Leu Arg Pro Gly Arg
                85                  90                  95
Phe Asp Arg Arg Val Val Val Asn Leu Pro Asp Ile Lys Gly Arg Phe
            100                 105                 110
Glu Ile Leu Ala Val His Ala Lys Arg Ile Lys Leu Asp Pro Thr Val
        115                 120                 125
Asp Leu Met Ala Val Ala Arg Ser Thr Pro Gly Ala Ser Gly Ala Asp
    130                 135                 140
Leu Glu Asn Leu Leu Asn Glu Ala Ala Leu Leu Ala Ala Arg Lys Asp
145                 150                 155                 160
Arg Thr Ala Val Thr Ala Val Glu Val Ala Glu Ala Arg Asp Lys Val
                165                 170                 175
Leu Tyr Gly Lys Glu Arg Arg Ser Leu Glu Met Asp Ala Gln Glu Lys
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            180                 185                 190
Lys Thr Thr Ala Tyr His Glu Ser Gly His Ala Ile Val Gly Leu Cys
        195                 200                 205
Val Glu His Ser Asp Pro Val Asp Lys Val Thr Ile Ile Pro Arg Gly
    210                 215                 220
Leu Ser Leu Gly Ala Thr His Phe Leu Pro Glu Lys Asn Lys Leu Ser
225                 230                 235                 240
Tyr Trp Lys Lys Glu Leu Tyr Asp Gln Leu Ala Val Leu Met Gly Gly
                245                 250                 255
Arg Ala Ala Glu Gln Ile Phe Leu Gly Asp Val Ser Ser Gly Ala Gln
            260                 265                 270
Gln Asp Ile Ala Gln Ala Thr Lys Ile Val Arg Ser Met Ile Cys Glu
        275                 280                 285
Trp Gly Met Ser Asp His Leu Gly Thr Val Ala Tyr Asp Glu His Ser
    290                 295                 300
Glu Ala Ala Pro Thr Gly Tyr Gly Ser Tyr His Glu Lys Asn Tyr Ser
305                 310                 315                 320
Glu Glu Thr Ala Lys Val Ile Asp Asn Glu Leu Lys Thr Leu Leu Asp
                325                 330                 335
Ala Ala Tyr Gln Arg Ala Leu Asp Ile Ile Asn Ser His Lys Glu Glu
            340                 345                 350
Leu Glu Leu Met Thr Gln Met Leu Ile Glu Phe Glu Thr Leu Asp Ser
        355                 360                 365
Lys Asp Val Lys Glu Ile Met Asp His Ser Trp Asp Ala Asp Lys Lys
    370                 375                 380
Arg Ala Arg Met Lys Glu Glu Gly Met Leu Tyr Lys Lys Ile Ser Asp
385                 390                 395                 400
Asp Leu Pro Pro Pro Pro Pro Gln Glu Asn Val Gln Asp Gly Thr Ser
                405                 410                 415
Leu Lys Phe Asn Thr Ser Thr
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<211>82
<212>PRT
<213>Chlamydia trachomatis
<400>532
Ile Ser Leu Lys Asn Pro Thr Lys Phe Thr Ser Leu Gly Gly Arg Ile
  1               5                  10                  15
Pro Lys Gly Ile Leu Leu Ile Gly Ala Pro Gly Thr Gly Lys Thr Leu
             20                  25                  30
Ile Ala Lys Ala Val Ala Gly Glu Ala Asp Arg Pro Phe Phe Ser Ile
         35                  40                  45
Ala Gly Ser Asp Phe Val Glu Met Phe Val Gly Val Gly Ala Ser Arg
     50                  55                  60
Ile Arg Asp Met Phe Glu Gln Ala Lys Arg Asn Ala Pro Trp His Tyr
 65                  70                  75                  80
Leu His

<210>533
<211>451
<212>PRT
<213>Chlamydia trachomatis
<400>533
Leu Ser Ala Cys Leu Ile Ser Ile Val Val Ser Phe Met Ala Lys Asp
  1               5                  10                  15
Lys Lys Thr Asn Pro Glu Ser Lys Lys Ser Phe Pro Thr Ala Phe Phe
             20                  25                  30
Phe Leu Leu Phe Gly Val Ile Phe Gly Val Val Thr Val Gln Asn Phe
         35                  40                  45
Phe Ser Ala Lys Lys Ala Ser Val Gly Phe Ser His Gln Leu Glu His
     50                  55                  60
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Leu Val Asn Leu Lys Leu Leu Ile Pro Glu Glu Ser Arg Lys Thr Ala
 65                  70                  75                  80
Leu Asn Asp Asn Leu Val Ser Phe Ser Gly Arg Phe Arg Glu Val Val
                85                  90                  95
Pro Ala Glu Gly Gln Val Arg Tyr Gln Tyr Leu Asp Leu Ile Glu Arg
            100                 105                 110
Lys His Gln Ile Asp Phe Glu Leu Glu Glu Ala Ser Lys Ser Leu Thr
        115                 120                 125
Val Leu Ser Lys Glu Val Arg Asn Ala Ile Thr Trp Phe Ser Ala Ile
    130                 135                 140
Ser Gly Met Pro Ile Pro Glu Ala Gly Tyr Thr Ile Ser Pro Arg Thr
145                 150                 155                 160
Asp Val Gly Leu Ser Val Leu Glu Pro Leu Val Val Tyr Gly Pro Val
                165                 170                 175
Asp Ala Gln Ile Val Asn Leu Ala Ala Leu Glu Asn Arg Val Arg Ser
            180                 185                 190
Leu Pro Lys Ser Thr Glu Ser Leu Arg Val Phe Gly Ser Asp Leu Tyr
        195                 200                 205
Ala Leu Ile Gly Lys Tyr Leu Ser Pro Ala Leu Gly Ile Gly Ser Glu
    210                 215                 220
Ser Leu Lys Lys Glu Ile Lys Asp Leu His Gln Gln Val Glu Asn Ser
225                 230                 235                 240
Leu Thr Gln Val Ile Glu Gly Asp Gln Ala Val Ala Leu Tyr Lys Thr
                245                 250                 255
Val Leu Glu Thr Leu His Arg Ile Ser Leu Ala Leu Val Ser Pro Glu
            260                 265                 270
Glu Gly Thr Arg Phe His Gln Leu Arg Ser Val Arg Leu Tyr Arg Glu
        275                 280                 285
Asp Phe Asn Arg Cys Val Lys Leu Leu Arg Glu Ser Asp Glu Thr Gln
    290                 295                 300
Val Gln Leu Asp Lys Leu Arg Gly Glu Leu Val Gln Ala Val Trp Tyr
305                 310                 315                 320
Phe Asn Asn Gln Glu Leu Ser Ser Arg Ala Leu Glu Lys Gln Asp Pro
                325                 330                 335
Glu Val Phe Ser Arg Trp Phe Glu Gly Ala Lys Gln Glu Trp Ala Ala
            340                 345                 350
Phe Ser Ser Asn Lys Ser Leu Ser Phe Arg Ala Pro Asp Gln Pro Arg
        355                 360                 365
Asn Leu Val Leu Glu Lys Thr Phe Arg Ser Glu Glu Pro Thr Pro His
    370                 375                 380
Tyr Ser Gly Tyr Leu Phe Thr Phe Met Pro Ile Ile Leu Val Leu Leu
385                 390                 395                 400
Phe Ile Tyr Phe Ile Phe Ser Arg Gln Val Lys Gly Met Asn Gly Ser
                405                 410                 415
Ala Met Ser Phe Gly Lys Ser Pro Ala Arg Leu Leu Ala Lys Gly Gln
            420                 425                 430
Lys Gln Ser Asn Phe Cys Gly Cys Ser Arg Asp Arg Gly Ser Gln Arg
        435                 440                 445
Arg Thr Arg
    450
<210>534
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<212>PRT
<213>Chlamydia trachomatis
<400>534
Cys Tyr Asp Asn Pro Phe Ile Phe Glu Asn Asp Lys Gln Leu Glu Gly
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Phe Phe Ser Ser Leu Asp Lys Lys Lys Lys Tyr Leu Leu Ala Leu Ser
             20                  25                  30
Gly Gly Ser Asp Ser Leu Phe Leu Met Tyr Leu Leu Lys Ser Arg Ala
         35                  40                  45
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Ile Phe Phe Thr Ala Val His Val Asp Tyr Gly Trp Arg Glu Thr Ser
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Tyr Gln Glu Ala Ser Asp Leu Ala Ala Leu Cys Glu Gln Glu Gln Ile
 65                  70                  75                  80
Pro Phe Ile Leu Asp Arg Pro Glu Ala Thr Asp Pro Met Asp Ser Arg
                 85                  90                  95
Asp Ile Glu Asn Ala Ala Arg Arg Tyr Arg Tyr Glu Leu Phe Tyr Arg
            100                 105                 110
Leu Cys Lys Glu Lys Cys Phe Ser Gly Val Phe Leu Gly His His Ala
        115                 120                 125
Asp Asp Gln Ala Glu Thr Ile Leu Lys Arg Val Phe Glu Gly Ala His
    130                 135                 140
Leu Gly Asn Leu Lys Gly Met Ser Ala Gln Val Met Tyr Arg Asp Val
145                 150                 155                 160
Ala Leu Leu Arg Pro Leu Leu His Ile Pro Lys His Lys Ile Val Glu
                165                 170                 175
Ala Leu Asp Ser His Gln Val Gln Tyr Val Gln Asp Ile Thr Asn Cys
            180                 185                 190
Asn Glu Arg Phe Leu Arg Ala Arg Met Arg Glu Arg Leu Phe Pro Tyr
        195                 200                 205
Leu Gln Asp Val Phe Gly Lys Asn Ile Arg Asp Pro Leu Leu Ser Leu
    210                 215                 220
Ala Gly Asp Ser Ala Glu Leu Arg Glu Tyr Leu Asp Gln Gln Thr Ala
225                 230                 235                 240
Pro Phe Leu Leu Arg Val Val Asp Asn Glu Arg Gly Lys Leu Leu Pro
                245                 250                 255
Ile Glu Gln Glu Leu Leu Lys Thr Pro Phe Leu Ala Lys Trp Val Cys
            260                 265                 270
Lys Gln Phe Phe Leu Asn Glu Gly Leu Val Ala Ser Lys Ser Phe Leu
        275                 280                 285
Gln Thr Val Tyr Asp His Leu Met Thr Gly Ser Thr Ala Arg Leu Arg
    290                 295                 300
Leu Arg Asn Arg Thr Val Leu Val Lys Ala Arg Gly Val Ile Ile Glu
305                 310                 315                 320
Ser Ile Tyr

<210>535
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<212>PRT
<213>Chlamydia trachomatis
<400>535
Asn Val Gln Leu Ile Phe Tyr Tyr Gly Ile Ile Met Pro Ile Leu Trp
  1                 5                  10                  15
Lys Val Leu Ile Phe Arg Tyr Leu Lys Thr Thr Val Phe Cys Thr Leu
             20                  25                  30
Ser Leu Ile Cys Ile Ser Ile Ile Ser Ser Leu Gln Glu Ile Val Ser
         35                  40                  45
Tyr Ile Ala Lys Asp Val Pro Tyr Ala Thr Val Phe Lys Val Thr Ala
     50                  55                  60
Tyr Gln Ile Pro Tyr Leu Leu Pro Phe Ile Leu Pro Ala Ser Cys Phe
 65                  70                  75                  80
Ile Ser Ala Phe Thr Leu Phe Arg Lys Leu Ser Asp Asn Asn Gln Ile
                 85                  90                  95
Thr Phe Leu Lys Ala Ser Gly Ala Ser Gln Gly Met Ile Ile Phe Pro
            100                 105                 110
Val Leu Ile Ala Ser Gly Val Leu Cys Cys Phe Asn Phe Tyr Thr Cys
        115                 120                 125
Ser Glu Leu Ala Ser Ile Cys Arg Phe Gln Thr Gly Lys Ala Ile Ala
    130                 135                 140
Asn Ile Ala Met Thr Ser Pro Ala Leu Leu Leu Gln Thr Leu Gln Lys
145                 150                 155                 160
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Lys Glu Asn Asp Arg Ile Phe Ile Ala Ile Asp His Cys Gly Lys Ser
                165                 170                 175
Lys Phe Asp Asn Val Ile Ile Ala Leu Lys His Asn Gln Glu Ile Ser
            180                 185                 190
Asn Ile Gly Phe Ile Glu Thr Ile Ile Pro Asp Val Asn Lys Asp Ser
        195                 200                 205
Val Gln Ala Lys Asn Val Leu Val Ile Ser Lys Ile Pro Leu Phe Ser
    210                 215                 220
Glu Ala Arg Thr Ser Asn Pro Asn Glu Phe Tyr Leu Glu Thr Leu Asp
225                 230                 235                 240
Glu Phe Leu Ile Pro Lys Ile Thr Ala Thr Leu Phe Ala Gly Lys Ser
                245                 250                 255
Tyr Met Lys Thr Arg Thr Asp Tyr Leu Pro Trp Lys Gln Leu Ile Gln
            260                 265                 270
Asp Ala Arg Leu His Leu Ala Glu Ile Leu Arg Arg Ile Ala Ile Gly
        275                 280                 285
Leu Leu Cys Ser Thr Met Thr Phe Ser Gly Leu Ala Leu Gly Thr Tyr
    290                 295                 300
Lys Pro Arg Phe Arg Lys Pro Val Leu Ile Tyr Ala Leu Phe Pro Ile
305                 310                 315                 320
Leu Asn Leu Ile Phe Leu Ile Val Gly Lys Asn Thr Ile His Pro Ile
                325                 330                 335
Ser Ala Val Met Leu Phe Leu Phe Pro Gln Leu Leu Ser Trp Leu Ile
            340                 345                 350
Phe Ser Trp Arg Ile Tyr Thr Glu Asn Gln Gly His Ala
        355                 360                 365
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<212>PRT
<213>Chlamydia trachomatis
<400>536
Lys Ser Arg Ala Cys Ile Asp Met Val Ile Trp Lys Arg Tyr Leu Leu
  1               5                  10                  15
Ser Arg Phe Trp Ile Ser Leu Ser Ser Leu Phe Phe Leu Ala Val Ile
             20                  25                  30
Phe Tyr Ala Ser Ile His His Ser Leu His Ala Phe Arg Glu Gly Lys
         35                  40                  45
Thr Ala Ile Ala Gly Ala Pro Leu Gln Leu Ser Leu Leu Tyr Tyr Leu
     50                  55                  60
Ser Gln Ile Ser Leu Lys Ala Glu Phe Ile Leu Pro Thr Thr Arg Cys
 65                  70                  75                  80
Asn Cys Phe Asp Asn Tyr Thr Ile Phe His Ala Glu Gln Lys Arg Asn
                 85                  90                  95
Ser Ile Thr Ala Gly Phe Arg Ala Phe Pro Glu Asn Phe Xaa Thr Ser
            100                 105                 110
Thr Ser Tyr Ile
        115
<210>537
<211>154
<212>PRT
<213>Chlamydia trachomatis
<400>537
Lys Gln Asn Ser Phe Ser Leu Gln Leu Val Ala Ile Ala Ser Thr Ile
  1               5                  10                  15
Thr Leu Phe Ser Met Gln Ser Lys Arg Glu Ile Leu Leu Leu Gln Ala
             20                  25                  30
Ser Gly Leu Ser Leu Lys Thr Leu Xaa Arg Pro Leu Val Ile Ser Ser
         35                  40                  45
Ser Leu Ile Thr Leu Leu Leu Tyr Ala Asn Phe Gln Trp Leu His Pro
     50                  55                  60
Ile Cys Glu Lys Ile Ser Val Thr Lys Glu His Met Asp Lys Gly Thr
```

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Sequence Listing

```
 65                  70                  75                  80
Leu Glu Lys Ala Gln Glu Lys Ile Pro Ala Leu Tyr Leu Lys Asp Gln
                85                  90                  95
Thr Val Leu Ile Phe Ser Ser Ile Asn Arg Arg Ala Ala Thr Leu Asn
            100                 105                 110
Asn Val Phe Trp Ile Lys Gly Pro Lys Thr Ile Tyr Ala Ile Lys Lys
        115                 120                 125
Leu Ala Phe Thr Thr Pro Ser Leu Leu Ser Gly Leu Lys Cys Pro Ile
    130                 135                 140
Phe Pro Lys Met Lys Ile Thr Lys Cys Leu
145                 150
<210>538
<211>145
<212>PRT
<213>Chlamydia trachomatis
<400>538
Asn Asp Leu Cys Asn Gln Lys Thr Cys Ile Tyr Tyr Ser Ile Ala Pro
  1               5                  10                  15
Ile Gly Leu Glu Val Ser Tyr Phe Ser Glu Asp Glu Asn His Glu Val
             20                  25                  30
Ser Leu Thr Gln Phe Phe Asp Met Lys Glu Phe Pro Glu Leu Glu Phe
         35                  40                  45
Ser Tyr Tyr Asp Asn Pro Phe Ser Lys Ile Phe Ile Thr Gly Arg Asp
     50                  55                  60
Cys Ser Phe Ser Ala Phe Leu Gln Ala Ile Pro Trp His Ala Ala Lys
 65                  70                  75                  80
Phe Gly Leu Leu Thr Thr Val Pro Gln Arg Ile Leu Ser Leu Leu Thr
                85                  90                  95
Leu Phe Tyr Tyr Met Leu Ile Ser Pro Leu Leu Cys Ile Ala Ala Val
            100                 105                 110
Ile Leu Ser Ala His Leu Cys Leu Arg Phe His Arg Leu Pro Lys Ile
        115                 120                 125
Thr Trp Ala Tyr Leu Val Leu Trp Glu Pro Leu Ile Phe Ser Leu Leu
    130                 135                 140
Phe
145
<210>539
<211>491
<212>PRT
<213>Chlamydia trachomatis
<400>539
Arg Lys Leu Ser Ile Ser Xaa Gly Lys Ile His Glu Ser Met His Glu
  1               5                  10                  15
Asn Asp Pro Leu Thr Lys Thr Ile Val Trp Asn Ser Asp Glu Ile Thr
             20                  25                  30
Lys Leu Ala Ser Ser Leu Val Tyr Thr Asn Asp Met Pro Ile Arg Leu
         35                  40                  45
Phe Tyr Gln Lys Ala Leu Thr Asn Met Ser Ala Glu Leu Thr Val Asn
     50                  55                  60
Val His Asn Ala Leu Met Ala Leu Phe Leu Ala Arg Tyr Glu Ala Thr
 65                  70                  75                  80
Ala Val Ser Gln Gln Pro Arg Lys Glu Asn Leu Ser Tyr Phe Asn Asp
                85                  90                  95
Phe Leu His Phe Leu Arg Lys Ala Ala Ala Leu Leu Asn Glu Lys Asp
            100                 105                 110
Leu Leu Asp Leu Gln Glu Lys His Ser Lys Ser Leu Val Ser Ser Leu
        115                 120                 125
Ser Ala Lys Leu Tyr Asp His Thr Ile Asp Phe Val Glu Ala Ala Asn
    130                 135                 140
Tyr Ile Phe Leu Asn Ile Ser Ser Lys Leu Gln Pro Glu Glu Gly Lys
145                 150                 155                 160
```

Sequence Listing

```
Lys Pro Leu Ser Ala Gly Gln Tyr Val Ala Glu Ile Tyr Asp Glu Leu
                165                 170                 175
His Arg Leu Phe Ser Lys Tyr Pro Asn Gly Pro Leu Phe Lys Ala Ile
            180                 185                 190
Asp Arg Met Leu Asp Pro Tyr Leu Lys Glu Phe Asp Pro Ile Leu Leu
        195                 200                 205
Gly Ile Leu Pro Cys Leu Glu Gly Lys Leu Ile Gln Gly Asp Lys Glu
    210                 215                 220
Ile Lys Val Leu Arg Thr Pro Ser Pro Val Ser Gln Ser Ser Ile Leu
225                 230                 235                 240
Tyr Ala Asn Cys Asn Gly Glu Phe Leu His Phe Leu Asp Ala Lys Thr
                245                 250                 255
Cys Gln Gly Asp Lys Ile Leu Val Ile Ile Pro Arg Pro Trp Arg Pro
            260                 265                 270
Glu His Ala Thr Ser Arg Ser Arg Ile Ile Glu Glu Ser Leu Gln Asp
        275                 280                 285
Tyr Ser Ser Val Tyr Met Ser Ala Phe Pro Glu Pro Glu Asp Phe Leu
    290                 295                 300
Tyr Gly Leu Glu Gln Val His Gly Glu Leu Glu Thr Phe Ala Asp Phe
305                 310                 315                 320
Phe Ser Leu Val Gln Gln Glu Phe Phe Lys Pro Lys Ala Gln Gly Tyr
                325                 330                 335
Cys Val Leu Pro Glu Glu Met Lys Glu Arg Met Gly Val Phe Phe Arg
            340                 345                 350
Arg Tyr Leu Phe Leu Leu Leu Lys Asn Val Phe Phe Ser Lys Xaa Lys
        355                 360                 365
Ile Leu Phe Lys Asn Asp Lys Val Leu Leu Leu His Leu Ile Tyr Tyr
    370                 375                 380
Phe Val Val Phe Asn Leu Ile Glu Gln Leu Asp Pro Asn Thr Leu Val
385                 390                 395                 400
Ile Met Ser Lys Asp Gly Leu Asp Tyr Ala Ser Val Phe Val Ser Gly
                405                 410                 415
Phe Ala Phe Phe Glu Asn Arg Gly Asn Trp Asp Glu Asp Ser Leu Lys
            420                 425                 430
Arg Met Val Ala Arg Met Leu Ala Pro Thr Leu Val Ala Arg Asp Arg
        435                 440                 445
Leu Val Phe Ala Gln His Val Glu Leu Leu Ser Lys Phe Leu Asn Cys
    450                 455                 460
Leu Arg Lys Asn Arg His Asn Leu Lys Asp Leu Arg Thr Leu Phe Ser
465                 470                 475                 480
Tyr Asp Leu Glu Gly Trp Gln Phe Ser Gly Ile
                485                 490

<210>540
<211>190
<212>PRT
<213>Chlamydia trachomatis
<400>540
Lys Asp Tyr Phe Ser Leu Ala Leu Gly Gly Gly Met Glu Lys Thr Arg
  1               5                  10                  15
Lys Phe Glu Lys Ala Leu Glu Asn Leu Glu Gln Leu Lys Lys Ile Ser
             20                  25                  30
Tyr Asp Tyr Ser Ser Gly Asn Ala Glu Ala Ser Ser His Asn Lys Ala
         35                  40                  45
Leu Ser Glu Met Lys Lys Ala Met His Tyr Ile Asp His Tyr Phe Lys
     50                  55                  60
Gln Ala Gly Ala Leu Ser Gln Lys Asp Val Asp Lys Val Ile Lys Glu
 65                  70                  75                  80
Thr Asp Phe Leu Ile Ala Gly Val Gln Asp Val Phe Ser Phe Leu Glu
                 85                  90                  95
Asp Arg Lys Glu Glu Val Tyr Arg Ser Leu Ser Gln Asp Tyr Arg His
            100                 105                 110
```

```
Leu Asn His Thr Tyr Asp Val Thr Arg Glu His Leu Asn Asn Lys Met
        115                 120                 125
Val Glu Pro Lys Glu Ile Leu Asn Gly Ser Leu Glu Asn Cys Gln Asp
    130                 135                 140
Arg Glu Glu Phe Leu Asn Asn Leu Val Glu Val Lys Arg Asp Arg Ser
145                 150                 155                 160
Tyr Glu Leu Phe Tyr Met Ala Asn Glu Asp Asn Lys Arg Phe Tyr Thr
                165                 170                 175
Asp Ala Leu Ala Gln Ile Ile Tyr Lys Xaa Arg Glu Asp Pro
            180                 185                 190
<210>541
<211>194
<212>PRT
<213>Chlamydia trachomatis
<400>541
Phe Arg Arg Arg Ser Ser Cys Ser Thr Asp Ala Gly Tyr Phe Leu Phe
  1               5                  10                  15
Gly Ser His His Gly Leu Gly Ser Ala Pro Leu Asp Phe Ala Ser Arg
            20                  25                  30
Glu Leu Ala Arg Asn Lys Pro Pro Val Arg Ile Val Ala Pro Gly Glu
        35                  40                  45
Cys Phe Arg Asn Glu Asp Val Ser Ala Arg Ser His Val Ile Phe His
    50                  55                  60
Gln Val Glu Ala Phe Cys Val Asp Lys Asp Ile Ser Phe Ser Asp Leu
65                  70                  75                  80
Thr Ser Met Leu Ala Gly Phe Tyr His Ile Phe Phe Gly Arg Lys Val
                85                  90                  95
Glu Leu Arg Phe Arg His Ser Tyr Phe Pro Phe Val Glu Pro Gly Ile
            100                 105                 110
Glu Val Asp Ile Ser Cys Glu Cys His Gly Ala Gly Cys Ser Leu Cys
        115                 120                 125
Lys His Ser Gly Trp Leu Glu Val Ala Gly Ala Gly Met Ile His Pro
    130                 135                 140
Asn Val Leu Arg Lys Ala Ser Phe Asp Pro Glu Glu Tyr Ser Gly Tyr
145                 150                 155                 160
Ala Leu Gly Met Gly Ile Glu Arg Leu Ala Met Leu Lys Tyr Gly Ile
                165                 170                 175
Ser Asp Ile Arg Leu Phe Ser Glu Asn Asp Leu Arg Phe Leu Arg Gln
            180                 185                 190
Phe Ser

<210>542
<211>181
<212>PRT
<213>Chlamydia trachomatis
<400>542
Met Thr Ile Gln Glu Glu Leu Glu Ala Val Lys Gln Gln Phe Ser Cys
  1               5                  10                  15
Asp Val Ser Leu Ala His Ser Ser Lys Asp Leu Phe Asp Val Lys Val
            20                  25                  30
Lys Tyr Leu Gly Lys Lys Gly Ile Phe Arg Gly Phe Ala Asp Gln Leu
        35                  40                  45
Arg Lys Cys Pro Ile Glu Gln Lys Ala Thr Val Gly Ala Ser Ile Asn
    50                  55                  60
Ala Cys Lys Gln Tyr Val Glu Glu Val Leu Leu Glu Arg Gly Lys Ala
65                  70                  75                  80
Val Leu Ala Lys Glu Glu Ala Glu Glu Phe Leu Lys Glu Lys Ile Asp
                85                  90                  95
Ile Ser Leu Pro Gly Ser Glu Glu Ala Ala Leu Gly Gly Lys His Val
            100                 105                 110
Ile Lys Lys Val Leu Asp Asp Val Val Asp Ile Phe Val Arg Phe Gly
```

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Sequence Listing

```
        115                 120                 125
Phe Cys Val Arg Glu Ala Pro Asn Ile Glu Ser Glu Lys Asn Asn Phe
    130                 135                 140
Ser Leu Leu Asn Phe Glu Glu Asp His Pro Ala Arg Gln Met Gln Asp
145                 150                 155                 160
Thr Phe Tyr Leu Asp Pro Thr Thr Val Leu Val Arg Pro Arg Trp Ile
                165                 170                 175
Leu Arg Leu Gly Ser
            180
<210>543
<211>107
<212>PRT
<213>Chlamydia trachomatis
<400>543
Met Val Arg Ala Thr Gly Ser Val Ala Ser Arg Ser Arg Arg Lys Arg
  1               5                  10                  15
Val Leu Lys Gln Ala Lys Gly Phe Trp Gly Asp Arg Lys Gly His Phe
            20                  25                  30
Arg Gln Ser Arg Ser Ser Val Met Arg Ala Met Ala Phe Asn Tyr Met
        35                  40                  45
His Arg Lys Asp Arg Lys Gly Asp Phe Arg Ser Leu Trp Ile Thr Arg
    50                  55                  60
Leu Asn Val Ala Ser Arg Ile His Gly Leu Ser Tyr Ser Arg Leu Ile
65                  70                  75                  80
Asn Gly Leu Lys Gln Ala Gly Ile His Leu Xaa Glu Lys Cys Cys Leu
                85                  90                  95
Arg Trp Leu Phe Met Thr Leu Lys Gly Leu Leu
            100                 105
<210>544
<211>214
<212>PRT
<213>Chlamydia trachomatis
<400>544
Glu Lys Ser Leu Phe Leu Gly Lys Gly Gly Leu Trp Phe Phe Leu Gly
  1               5                  10                  15
Ser Pro Ser Ala Ile Thr Asn Phe Ser Arg Val Asp Val Ala Leu Asn
            20                  25                  30
Leu Arg Ile Asn Arg Gln Ile Arg Ala Pro Arg Val Arg Val Ile Gly
        35                  40                  45
Ser Ala Gly Glu Gln Leu Gly Ile Leu Ser Ile Lys Glu Ala Leu Asp
    50                  55                  60
Leu Ala Lys Glu Ala Asp Leu Asp Leu Val Glu Val Ala Ser Asn Ser
65                  70                  75                  80
Glu Pro Pro Val Cys Lys Ile Met Asp Tyr Gly Lys Tyr Arg Tyr Asp
                85                  90                  95
Ile Thr Lys Lys Glu Lys Asp Ser Lys Lys Ala Gln His Gln Val Arg
            100                 105                 110
Ile Lys Glu Val Lys Leu Lys Pro Asn Ile Asp Asp Asn Asp Xaa Leu
        115                 120                 125
Thr Lys Ala Lys Gln Ala Arg Ala Phe Ile Glu Lys Gly Asn Lys Val
    130                 135                 140
Lys Val Ser Cys Met Phe Arg Gly Arg Glu Leu Ala Tyr Pro Glu His
145                 150                 155                 160
Gly His Lys Val Val Gln Arg Met Cys Gln Gly Leu Glu Asp Ile Gly
                165                 170                 175
Phe Val Glu Ser Glu Pro Lys Leu Asn Gly Arg Ser Leu Ile Cys Val
            180                 185                 190
Ile Ala Pro Gly Thr Leu Lys Thr Lys Lys Lys Gln Glu Lys Val His
        195                 200                 205
Ala Gln Asp Glu Lys Gln
    210
```

<210>545
<211>301
<212>PRT
<213>Chlamydia trachomatis
<400>545

```
Met Thr Asp Ser Phe Pro Phe Ser Val Gln Glu Ser Val Pro Leu Ser
  1               5                  10                  15
Arg Phe Ser Thr Phe Arg Ile Gly Gly Pro Ala Arg Tyr Phe Lys Glu
            20                  25                  30
Leu Thr Ser Leu Ser Glu Ala Leu Thr Val Phe Ser Tyr Leu His Thr
        35                  40                  45
His Pro Leu Pro Tyr Ile Ile Ile Gly Lys Gly Ser Asn Cys Leu Phe
    50                  55                  60
Asp Asp Gln Gly Phe Asp Gly Leu Val Leu Tyr Asn Asn Ile Gln Gly
65                  70                  75                  80
Gln Glu Phe Leu Ser Asp Thr Gln Ile Lys Val Leu Ser Gly Ser Ser
                85                  90                  95
Phe Ala Leu Leu Gly Lys Arg Leu Ser Ser Gln Gly Phe Ser Gly Leu
            100                 105                 110
Glu Phe Ala Val Gly Ile Pro Gly Thr Val Gly Gly Ala Val Phe Met
        115                 120                 125
Asn Ala Gly Thr Thr Leu Ala Asn Thr Ala Ser Ser Leu Ile Asn Val
    130                 135                 140
Glu Ile Ile Asp His Ser Gly Ile Leu Leu Ser Ile Pro Arg Glu Lys
145                 150                 155                 160
Leu Leu Phe Ser Tyr Arg Thr Ser Pro Phe Gln Lys Lys Pro Ala Phe
                165                 170                 175
Ile Ala Ser Ala Thr Phe Gln Leu Thr Lys Asp Pro Gln Ala Ala Lys
            180                 185                 190
Arg Ala Lys Ala Leu Ile Glu Glu Arg Ile Leu Lys Gln Pro Tyr Glu
        195                 200                 205
Tyr Pro Ser Ala Gly Cys Ile Phe Arg Asn Pro Glu Gly Leu Ser Ala
    210                 215                 220
Gly Ala Leu Ile Asp Arg Ala Gly Leu Lys Gly Leu Lys Ile Gly Gly
225                 230                 235                 240
Gly Gln Ile Ser Glu Lys His Gly Asn Phe Ile Ile Asn Thr Gly Asn
                245                 250                 255
Ala Cys Thr Ala Asp Ile Leu Glu Leu Ile Glu Ile Ile Gln Lys Ile
            260                 265                 270
Leu Lys Asn Lys Val Phe Pro Tyr Ile Lys Lys Ser Val Ser Ser Pro
        275                 280                 285
Phe Ala Ser Ser Leu Val Val Cys Glu Lys Glu Ile Thr
    290                 295                 300
```

<210>546
<211>202
<212>PRT
<213>Chlamydia trachomatis
<400>546

```
Val Gly Ser Phe Phe Lys Arg Leu Met Met Leu Thr Gly Ile Asp Ile
  1               5                  10                  15
Leu Phe Ser Asn Ile Ile Lys Leu Ser His Ser Ile Phe Arg Gln Val
            20                  25                  30
Val Glu Pro Gly Asp Thr Ile Val Asp Ala Thr Cys Gly Asn Gly Lys
        35                  40                  45
Asp Ala Leu Phe Leu Ala Gln Leu Leu Arg Gly Lys Gly Arg Leu Val
    50                  55                  60
Val Tyr Asp Ile Gln Gln Glu Ala Leu Asp Arg Ala Thr Ala Asn Phe
65                  70                  75                  80
Gln Ser Gly Leu Leu Ala Glu Glu Arg Ala Ile Ile Glu Met Lys Leu
                85                  90                  95
Cys Ser His Glu Tyr Leu Gln Glu Gln Gly Ala Lys Leu Phe His Tyr
```

Substitute Sheet (Rule 26)

```
            100                 105                 110
Asn Leu Gly Tyr Leu Pro Ser Gly Asp Lys Gln Ile Thr Thr Cys Ser
        115                 120                 125
Glu Ser Thr Val Thr Ser Ile Tyr Lys Ala Leu Glu Leu Val Ala Pro
    130                 135                 140
Ser Gly Ile Val Ser Val Val Cys Tyr Pro Gly His Gln Glu Gly Ala
145                 150                 155                 160
Ala Glu Leu Cys Cys Val Glu Gln Val Ala Thr Glu Leu Asp Pro Ser
                165                 170                 175
Met Trp Glu Val Cys Thr His Tyr Ser Val Asn Arg Arg Asn Ala Pro
            180                 185                 190
Arg Leu Phe Leu Phe Arg Arg Arg Gln Gly
        195                 200
<210>547
<211>243
<212>PRT
<213>Chlamydia trachomatis
<400>547
Ser Gly Glu Val Trp Gly Trp Ser Arg Cys Ser Leu Ser His Thr Lys
  1               5                  10                  15
Tyr Phe Pro Val Lys Pro Gln Asp Leu Lys Leu Pro Tyr Phe Trp Glu
             20                  25                  30
Glu Arg Ser Pro Gln Ile Ala Asn His Val Phe Tyr Val Pro Asn Tyr
         35                  40                  45
Tyr Ser Arg Tyr Glu Glu Phe Val Ile Pro Thr Trp Gln Glu Leu Phe
     50                  55                  60
Ala Asn Asn Gly Pro Ile Cys Cys Glu Leu Cys Ser Gly Asn Gly Asp
 65                  70                  75                  80
Trp Val Val Glu Gln Ala Leu Lys Asp Ala Ser Val Asn Trp Ile Ala
                85                  90                  95
Val Glu Lys Arg Phe Asp Arg Val Arg Lys Ile Trp Ser Lys Met Gly
            100                 105                 110
Thr Tyr Arg Val Asn Asn Leu Leu Ile Val Cys Gly Glu Ala Gln Thr
        115                 120                 125
Phe Phe Ser His Tyr Val Ser Asp Ala Ser Phe Gln Lys Ile Val Val
    130                 135                 140
Asn Phe Pro Asp Pro Trp Pro Lys Phe Arg His Arg Lys His Arg Leu
145                 150                 155                 160
Phe Gln Asp Leu Phe Val Gln Asp Met Met Arg Thr Leu Val Val Gly
                165                 170                 175
Gly Gln Leu Thr Leu Ala Thr Asp Asp Tyr Asn Tyr Leu Val Asn Ala
            180                 185                 190
Ile Thr Val Met Leu Lys Tyr Leu Ser Pro Gly Leu Lys Ser Pro His
        195                 200                 205
Tyr Ile Asn Val Lys Asp Asn Tyr Gly Gly Ser Trp Phe Glu Asn Leu
    210                 215                 220
Trp Arg Ser Lys Gly Gln Glu Ile Phe Cys Thr Glu Phe Ile Lys Arg
225                 230                 235                 240
Val Gly Ile

<210>548
<211>346
<212>PRT
<213>Chlamydia trachomatis
<400>548
Met Gln Ala Asp Ile Leu Asp Gly Lys Gln Lys Arg Val Asn Leu Asn
  1               5                  10                  15
Ser Lys Arg Leu Val Asn Cys Asn Gln Val Asp Val Asn Gln Leu Val
             20                  25                  30
Pro Ile Lys Tyr Lys Trp Ala Trp Glu His Tyr Leu Asn Gly Cys Ala
         35                  40                  45
```

```
Asn Asn Trp Leu Pro Thr Glu Ile Pro Met Gly Lys Asp Ile Glu Leu
     50                  55                  60
Trp Lys Ser Asp Arg Leu Ser Glu Asp Glu Arg Arg Val Ile Leu Leu
 65                  70                  75                  80
Asn Leu Gly Phe Phe Ser Thr Ala Glu Ser Leu Val Gly Asn Asn Ile
                85                  90                  95
Val Leu Ala Ile Phe Lys His Val Thr Asn Pro Glu Ala Arg Gln Tyr
            100                 105                 110
Leu Leu Arg Gln Ala Phe Glu Glu Ala Val His Thr His Thr Phe Leu
        115                 120                 125
Tyr Ile Cys Glu Ser Leu Gly Leu Asp Glu Lys Glu Ile Phe Asn Ala
    130                 135                 140
Tyr Asn Glu Arg Ala Ala Ile Lys Ala Lys Asp Asp Phe Gln Met Glu
145                 150                 155                 160
Ile Thr Gly Lys Val Leu Asp Pro Asn Phe Arg Thr Asp Ser Val Glu
                165                 170                 175
Gly Leu Gln Glu Phe Val Lys Asn Leu Val Gly Tyr Tyr Ile Ile Met
            180                 185                 190
Glu Gly Ile Phe Phe Tyr Ser Gly Phe Val Met Ile Leu Ser Phe His
        195                 200                 205
Arg Gln Asn Lys Met Ile Gly Ile Gly Glu Gln Tyr Gln Tyr Ile Leu
    210                 215                 220
Arg Asp Glu Thr Ile His Leu Asn Phe Gly Ile Asp Leu Ile Asn Gly
225                 230                 235                 240
Ile Lys Glu Glu Asn Pro Glu Ile Trp Thr Pro Glu Leu Gln Gln Glu
                245                 250                 255
Ile Val Glu Leu Ile Lys Arg Ala Val Asp Leu Glu Ile Glu Tyr Ala
            260                 265                 270
Gln Asp Cys Leu Pro Arg Gly Ile Leu Gly Leu Arg Ala Ser Met Phe
        275                 280                 285
Ile Asp Tyr Val Gln His Ile Ala Asp Arg Arg Leu Glu Arg Ile Gly
    290                 295                 300
Leu Lys Pro Ile Tyr His Thr Lys Asn Pro Phe Pro Trp Met Ser Glu
305                 310                 315                 320
Thr Ile Asp Leu Asn Lys Glu Lys Asn Phe Phe Glu Thr Arg Asp Thr
                325                 330                 335
Glu Tyr Gln His Ala Ala Ser Leu Thr Trp
            340                 345
<210>549
<211>1066
<212>PRT
<213>Chlamydia trachomatis
<400>549
Arg Arg Leu Cys Phe Lys Ile Glu Asn Asn Ala Tyr Ser Met Phe Thr
  1                 5                  10                  15
Arg Ile Val Met Val Asp Leu Gln Glu Lys Gln Cys Thr Ile Val Lys
             20                  25                  30
Arg Asn Gly Met Phe Val Pro Phe Asp Arg Asn Arg Ile Phe Gln Ala
         35                  40                  45
Leu Glu Ala Ala Phe Arg Asp Thr Arg Arg Ile Asp Asp His Met Pro
     50                  55                  60
Leu Pro Glu Asp Leu Glu Ser Ser Ile Arg Ser Ile Thr His Gln Val
 65                  70                  75                  80
Val Lys Glu Val Val Gln Lys Ile Thr Asp Gly Gln Val Val Thr Val
                85                  90                  95
Glu Arg Ile Gln Asp Met Val Glu Ser Gln Leu Tyr Val Asn Gly Leu
            100                 105                 110
Gln Asp Val Ala Arg Asp Tyr Ile Val Tyr Arg Asp Asp Arg Lys Ala
        115                 120                 125
His Arg Lys Lys Ser Trp Gln Ser Leu Ser Val Val Arg Arg Cys Gly
    130                 135                 140
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```
Thr Val Val His Phe Asn Pro Met Lys Ile Ser Ala Ala Leu Glu Lys
145                 150                 155                 160
Ala Phe Arg Ala Thr Asp Lys Thr Glu Gly Met Thr Pro Ser Ser Val
                165                 170                 175
Arg Glu Glu Ile Asn Ala Leu Thr Gln Asn Ile Val Ala Glu Ile Glu
            180                 185                 190
Glu Cys Cys Ser Gln Gln Asp Arg Arg Ile Asp Ile Glu Lys Ile Gln
        195                 200                 205
Asp Ile Val Glu Gln Gln Leu Met Val Val Gly His Tyr Ala Ile Ala
    210                 215                 220
Lys Asn Tyr Ile Leu Tyr Arg Glu Ala Arg Ala Arg Val Arg Asp Asn
225                 230                 235                 240
Arg Glu Glu Asp Gly Ser Thr Glu Lys Thr Ile Ala Glu Glu Ala Phe
                245                 250                 255
Glu Val Leu Ser Lys Asp Gly Ser Thr Tyr Thr Met Thr His Ser Gln
            260                 265                 270
Leu Leu Ala His Leu Ala Arg Ala Cys Ser Arg Phe Pro Glu Thr Thr
        275                 280                 285
Asp Ala Ala Leu Leu Thr Asp Met Ala Phe Ala Asn Phe Tyr Ser Gly
    290                 295                 300
Ile Lys Glu Ser Glu Val Val Leu Ala Cys Ile Met Ala Ala Arg Ala
305                 310                 315                 320
Asn Ile Glu Lys Glu Pro Asp Tyr Ala Leu Val Ala Ala Glu Leu Leu
                325                 330                 335
Leu Asp Val Val Tyr Lys Glu Ala Leu Gly Lys Ser Lys Tyr Ala Glu
            340                 345                 350
Asp Leu Glu Gln Ala His Arg Asp His Phe Lys Arg Tyr Ile Ala Glu
        355                 360                 365
Gly Asp Thr Tyr Arg Leu Asn Ala Glu Leu Lys His Leu Phe Asp Leu
    370                 375                 380
Asp Ala Leu Ala Asp Ala Met Asp Leu Ser Arg Asp Leu Gln Phe Ser
385                 390                 395                 400
Tyr Met Gly Ile Gln Asn Leu Tyr Asp Arg Tyr Phe Asn His His Glu
                405                 410                 415
Gly Cys Arg Leu Glu Thr Pro Gln Ile Phe Trp Met Arg Val Ala Met
            420                 425                 430
Gly Leu Ala Leu Asn Glu Gln Asp Lys Thr Ser Trp Ala Ile Thr Phe
        435                 440                 445
Tyr Asn Leu Leu Ser Thr Phe Arg Tyr Thr Pro Ala Thr Pro Thr Leu
    450                 455                 460
Phe Asn Ser Gly Met Arg His Ser Gln Leu Ser Ser Cys Tyr Leu Ser
465                 470                 475                 480
Thr Val Gln Asp Asp Leu Val Asn Ile Tyr Lys Val Ile Ala Asp Asn
                485                 490                 495
Ala Met Leu Ser Lys Trp Ala Gly Gly Ile Gly Asn Asp Trp Thr Ala
            500                 505                 510
Ile Arg Ala Thr Gly Ala Leu Ile Lys Gly Thr Asn Gly Arg Ser Gln
        515                 520                 525
Gly Val Ile Pro Phe Ile Lys Val Thr Asn Asp Thr Ala Val Ala Val
    530                 535                 540
Asn Gln Gly Gly Lys Arg Lys Gly Ala Val Cys Val Tyr Leu Glu Val
545                 550                 555                 560
Trp His Leu Asp Tyr Glu Asp Phe Leu Glu Leu Arg Lys Asn Thr Gly
                565                 570                 575
Asp Glu Arg Arg Arg Ala His Asp Val Asn Thr Ala Ser Trp Ile Pro
            580                 585                 590
Asp Leu Phe Phe Lys Arg Leu Gln Gln Lys Gly Thr Trp Thr Leu Phe
        595                 600                 605
Ser Pro Asp Asp Val Pro Gly Leu His Asp Ala Tyr Gly Glu Glu Phe
    610                 615                 620
Glu Arg Leu Tyr Glu Glu Tyr Glu Arg Lys Val Asp Thr Gly Glu Ile
```

625 630 635 640
Arg Leu Phe Lys Lys Val Glu Ala Glu Asp Leu Trp Arg Lys Met Leu
645 650 655
Ser Met Val Phe Glu Thr Gly His Pro Trp Met Thr Phe Lys Asp Pro
660 665 670
Ser Asn Ile Arg Ser Ala Gln Asp His Lys Gly Val Val Arg Cys Ser
675 680 685
Asn Leu Cys Thr Glu Ile Leu Leu Asn Cys Ser Glu Thr Glu Thr Ala
690 695 700
Val Cys Asn Leu Gly Ser Ile Asn Leu Val Gln His Ile Val Gly Asp
705 710 715 720
Gly Leu Asp Glu Glu Lys Leu Ser Glu Thr Ile Ser Ile Ala Val Arg
725 730 735
Met Leu Asp Asn Val Ile Asp Ile Asn Phe Tyr Pro Thr Lys Glu Ala
740 745 750
Lys Glu Ala Asn Phe Ala His Arg Ala Ile Gly Leu Gly Val Met Gly
755 760 765
Phe Gln Asp Ala Leu Tyr Lys Leu Asp Ile Ser Tyr Ala Ser Gln Glu
770 775 780
Ala Val Glu Phe Ala Asp Tyr Ser Ser Glu Leu Ile Ser Tyr Tyr Ala
785 790 795 800
Ile Gln Ala Ser Cys Leu Leu Ala Lys Glu Arg Gly Thr Tyr Ser Ser
805 810 815
Tyr Lys Gly Ser Lys Trp Asp Arg Gly Leu Leu Pro Ile Asp Thr Ile
820 825 830
Gln Leu Leu Ala Asn Tyr Arg Gly Glu Ala Asn Leu Gln Met Asp Thr
835 840 845
Ser Ser Arg Lys Asp Trp Glu Pro Ile Arg Ser Leu Val Lys Glu His
850 855 860
Gly Met Arg His Cys Gln Leu Met Ala Ile Ala Pro Thr Ala Thr Ile
865 870 875 880
Ser Asn Ile Ile Gly Val Thr Gln Ser Ile Glu Pro Thr Tyr Lys His
885 890 895
Leu Phe Val Lys Ser Asn Leu Ser Gly Glu Phe Thr Ile Pro Asn Val
900 905 910
Tyr Leu Ile Glu Lys Leu Lys Lys Leu Gly Ile Trp Asp Ala Asp Met
915 920 925
Leu Asp Asp Leu Lys Tyr Phe Asp Gly Ser Leu Leu Glu Ile Glu Arg
930 935 940
Ile Pro Asp His Leu Lys His Ile Phe Leu Thr Ala Phe Glu Ile Glu
945 950 955 960
Pro Glu Trp Ile Ile Glu Cys Ala Ser Arg Arg Gln Lys Trp Ile Asp
965 970 975
Met Gly Gln Ser Leu Asn Leu Tyr Leu Ala Gln Pro Asp Gly Lys Lys
980 985 990
Leu Ser Asn Met Tyr Leu Thr Ala Trp Lys Lys Gly Leu Lys Thr Thr
995 1000 1005
Tyr Tyr Leu Arg Ser Ser Ser Ala Thr Thr Val Glu Lys Ser Phe Val
1010 1015 1020
Asp Ile Asn Lys Arg Gly Ile Gln Pro Arg Trp Met Lys Asn Lys Ser
1025 1030 1035 1040
Ala Ser Ala Gly Ile Ile Val Glu Arg Ala Lys Lys Ala Pro Val Cys
1045 1050 1055
Ser Leu Glu Glu Gly Cys Glu Ala Cys Gln
1060 1065

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<213>Chlamydia trachomatis
<400>550
Met Asn Arg Ile Glu Ile Asp Leu Arg Gly Lys Arg Arg Val Val Thr

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Pro Asn Ala Ile Thr Ala Phe Gly Leu Cys Cys Gly Leu Phe Ile Ile
            20                  25                  30
Phe Lys Ser Val Leu Lys Thr Ser Ser Ser Leu Glu Leu Met His Arg
        35                  40                  45
Leu Gln Gly Leu Ser Leu Leu Leu Ile Ser Ala Met Ile Ala Asp Phe
    50                  55                  60
Ser Asp Gly Ala Val Ala Arg Ile Met Lys Ala Glu Ser Ala Phe Gly
65                  70                  75                  80
Ala His Phe Asp Ser Leu Ser Asp Ala Ile Thr Phe Gly Ile Ala Pro
                85                  90                  95
Pro Leu Ile Ala Ile Lys Ser Leu Asn Gly Glu Tyr Gly Gly Thr Phe
            100                 105                 110
Cys Ser Ser Phe Leu Leu Val Thr Cys Ile Ile Tyr Ser Leu Cys Gly
        115                 120                 125
Val Leu Arg Leu Val Arg Tyr Asn Leu Phe Ala Ala Thr Gly Glu Lys
    130                 135                 140
Ala Thr Thr Phe Thr Gly Leu Pro Ile Pro Ala Ala Ala Ala Cys Val
145                 150                 155                 160
Val Ser Leu Gly Val Leu Leu Ala Ser Asp Thr Leu Asn Ser Leu Pro
                165                 170                 175
Glu Arg Ala Arg Val Leu Leu Val Ser Leu Gly Leu Leu Leu Ser Gly
            180                 185                 190
Cys Leu Met Ile Ser Thr Trp Arg Phe Pro Gly Leu Lys His Phe His
        195                 200                 205
Phe Arg Val Ser Ser Ser Leu Leu Val Leu Gly Ile Gly Leu Val Ala
    210                 215                 220
Cys Leu Phe Phe Ser Gly Leu Val Asp His Phe Thr Gln Val Phe Xaa
225                 230                 235                 240
Leu Val Ser Trp Leu Tyr Val Leu Val Val Ala Pro Val Phe Pro Phe
                245                 250                 255
Ile Asn Lys Arg Ser Ser Ser
            260
<210>551
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<213>Chlamydia trachomatis
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Tyr Met Gly Val Phe Ala Ile Ser Leu Leu Ser Gln Thr Val Cys Leu
  1               5                  10                  15
Tyr Phe Thr Phe Phe Ser Leu Gly Ile Ala Leu Gly Val Leu Phe Ser
            20                  25                  30
Phe Lys Ile Phe Thr Lys Lys Leu Ser Arg Gln Tyr Glu Ile Ile Arg
        35                  40                  45
Asp Leu Glu His Ser Lys Ala Ile Leu Gln Met Ser Leu Asp Thr Arg
    50                  55                  60
Arg Ser Gln Glu Gln Ile Met Glu Glu Phe Ser His Lys Leu Thr Ser
65                  70                  75                  80
Val Ser Gln Ala Phe Ala Arg Asp Met Lys Thr Glu Ser Gln Glu Phe
                85                  90                  95
Phe Ser Glu Lys Thr Gln Ala Ile Thr Ser Val Leu Ala Pro Val His
            100                 105                 110
Asn Thr Leu Ser Ala Phe Lys Gln Asn Leu Glu Asn Phe Glu Thr Lys
        115                 120                 125
Gln Ala Glu Asp Arg Gly Val Ser Lys Asn Asn Ser Leu Asn Tyr Ser
    130                 135                 140
Leu Gln Asn Arg Ser
145
<210>552
<211>300
<212>PRT
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<213>Chlamydia trachomatis
<400>552

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Thr Ala Glu Gln Lys Leu Glu Arg Glu Thr Gln Ala Leu Thr Asn Ile
            20                  25                  30
Leu Lys His Pro Gly Ser Arg Gly Arg Trp Gly Glu Ile Gln Leu Glu
        35                  40                  45
Arg Ile Leu Glu Ile Ser Gly Met Leu Lys Tyr Cys Asp Tyr Ser Thr
    50                  55                  60
Gln Thr Val Asp Ser Ser Glu Ser Ser Ser Arg Ala Asp Ile Val Ile
65                  70                  75                  80
Arg Leu Pro Gln Asn Arg Ser Leu Val Ile Asp Ala Lys Thr Pro Phe
                85                  90                  95
Ser Glu Glu Tyr Leu Thr Asp Asn His Ala Asp Pro Thr Asp Leu Val
            100                 105                 110
Lys Lys Ile Lys Asp His Ile Lys Thr Leu Lys Thr Lys Ser Tyr Trp
        115                 120                 125
Asp Lys Phe Glu Gln Ser Pro Glu Phe Val Ile Leu Phe Leu Pro Gly
    130                 135                 140
Glu Ser Leu Phe Asn Asp Ala Ile Arg Cys Ala Pro Glu Leu Met Asp
145                 150                 155                 160
Tyr Ala Gly Gln Ser Asn Val Ile Leu Ser Ser Pro Val Thr Leu Met
                165                 170                 175
Ala Leu Leu Lys Thr Val Thr His Val Trp Lys Gln Glu Asn Leu Gln
            180                 185                 190
Asn Gln Ile Arg Glu Ile Gly Gln Leu Gly Lys Asp Leu Tyr Gln Arg
        195                 200                 205
Met His Lys Leu Phe Asp His Phe His Lys Val Gly Lys His Leu Gly
    210                 215                 220
Gln Ala Val His Ser Tyr Asn Asp Met Ser Ser Ser Leu Ser Ala Arg
225                 230                 235                 240
Val Leu Pro Ile Leu Arg Thr Phe Asp Lys Leu Glu Leu Ser Ser Ser
                245                 250                 255
His Asn Lys Ile Glu Ala Leu Ser Gln Val Ser Thr Leu Pro His Ser
            260                 265                 270
Pro Lys Val Pro Cys Pro Glu Ser Asp Leu Ala Glu Cys Leu Ser Pro
        275                 280                 285
Glu Ala Ser Tyr Leu Lys Pro Pro Ser Ser Asn Gln
    290                 295                 300
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<210>553
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<212>PRT
<213>Chlamydia trachomatis
<400>553

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Ala Phe Arg Ser Ile Ser Val Ala Arg Arg Arg Leu Asn Lys Val Leu
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Pro Leu Phe Ala Leu Asp Lys Val Pro Ser Leu Gly Lys Glu Phe Val
            20                  25                  30
Leu Glu Lys Glu Val Phe Ala Glu Gly Glu Val Leu His His Asp Cys
        35                  40                  45
Phe Thr Asn Asp Ile Ile Phe Val Glu Leu Val Phe Asp Leu Pro Ala
    50                  55                  60
Leu Ser Ala Glu Glu Leu Pro Trp Leu Arg Leu Leu Val Phe Val Leu
65                  70                  75                  80
Leu Gln Leu Gly Ser Gly Asn Arg Ser Tyr Lys Glu His Leu Glu Phe
                85                  90                  95
Leu Leu Glu His Thr Gly Gly Val Asp Val Leu Tyr Glu Phe Ser Ser
            100                 105                 110
Gln Ala Thr Asp Thr Asp Arg Leu Ser Pro Ser Ile Ser Ile Arg Gly
        115                 120                 125
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Lys Ala Leu Ile Ser Lys Ala Glu Tyr Leu Phe Gln Val Ile Arg Glu
    130                 135                 140
Thr Leu Thr Thr Val Asp Phe Ser Asp Ile Ala Arg Leu Lys Glu Leu
145                 150                 155                 160
Leu Met Gln His Ala Glu Ser Leu Thr Asn Ser Val Arg Asn Ser Pro
                165                 170                 175
Met Gly Tyr Ala Val Ser Leu Ala Cys Cys Asn Lys Ser Ile Ala Gly
            180                 185                 190
Gly Leu Ala Tyr Gln Met Ala Gly Leu Pro Tyr Val Lys Tyr Ile Arg
        195                 200                 205
Glu Leu Leu Ser Asn Phe Asp Ser Gln Ala Gln Glu Ile Ile Asp Arg
    210                 215                 220
Leu Gln Thr Leu Tyr Lys Lys Cys Phe Val Gly Arg Arg Gln Leu Val
225                 230                 235                 240
Ile Ser Ser Ser Lys Ala Asn Tyr Gln Val Leu His Asp Gln Arg Phe
                245                 250                 255
Phe Gly Leu Leu Asp Glu Arg Leu Glu Gly Gly Glu Leu Trp Lys Asn
            260                 265                 270
Pro Val Leu Asp Val Val Lys Asp Ser Arg Gly Ile Val Ile Pro Ala
        275                 280                 285
Arg Gly Ala Tyr Asn Val Leu Ala Phe Pro Leu Gly Ser Leu Ala Tyr
    290                 295                 300
Asp His Pro Asp Ala Ala Val Leu Ser Val Ala Ala Glu Val Leu Gly
305                 310                 315                 320
Asn Val Ile Leu His Ala Lys Ile Arg Glu Gln Gly Gly Ala Tyr Gly
                325                 330                 335
Ser Gly Ala Ser Ala Asn Leu Gly Arg Gly Ala Phe Tyr Cys Tyr Ser
            340                 345                 350
Tyr Arg Asp Pro Glu Val Ala Thr Thr Tyr Gln Val Leu Leu Gln Gly
        355                 360                 365
Ile Arg Asp Met Ala Ala Gly Asp Phe Ser Glu Glu Asp Val His Glu
    370                 375                 380
Gly Ile Leu Gly Val Ile Gln Asn Leu Asp Asp Pro Ile Ser Pro Gly
385                 390                 395                 400
Ser Arg Gly Ser Ala Ser Tyr Tyr Arg Ser Arg Ser Gly Lys Val Pro
                405                 410                 415
Phe Val Arg Gln Ala Phe Arg Gln Ala Val Leu Ser Thr Thr Lys Ala
            420                 425                 430
Gln Ile Cys Glu Val Val Arg Asn Arg Leu Glu Gly Cys Leu Ser Glu
        435                 440                 445
Ala Ser Phe Val Ser Phe Ala Gly Glu Glu Met Leu Gln Lys Ser Ala
    450                 455                 460
Lys Glu Leu Asn Glu Ala Phe Gln Ile Glu Ala Ala Phe
465                 470                 475
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<212>PRT
<213>Chlamydia trachomatis
<400>554
Lys Arg Ser Ala Leu Phe Met Lys Val Ser Ile Arg Ser Val Val Val
  1               5                  10                  15
Phe Phe Ile Phe Met Gly Ile Leu Asn Leu Gly Arg His Leu Asp Phe
            20                  25                  30
Leu Glu Glu Lys Leu Leu Arg Arg Val Gly Lys Val Glu Lys Gln Ser
        35                  40                  45
Val Thr Leu Pro Leu Gln Lys Arg Phe Lys Glu Pro Val Arg Val Ile
    50                  55                  60
Glu Arg Tyr Pro Ser Asp Gly Ala Asp Glu Asp Lys Val Leu Phe Gly
65                  70                  75                  80
Leu Ala Trp Leu Thr Cys Ser Ile Phe Asp Gln Gln Asp Leu Leu Ala
                85                  90                  95
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Leu His Val Leu Asp Leu Val Leu Met Gly Thr Asp Ala Ala Pro Leu
            100                 105                 110
Lys Ser Arg Leu Leu Lys Ser Gly Leu Cys Lys Gln Val Asp Met Ser
        115                 120                 125
Ile Asp Ser Glu Leu His Glu Ile Pro Val Tyr Ile Val Cys Lys Gly
    130                 135                 140
Cys Ser His Ser Gly Ser Gln Lys Leu Glu Ser Leu Ile Leu Ala Ser
145                 150                 155                 160
Leu Glu Glu Ile Leu Gln Glu Gly Ile Pro Met His Leu Val Glu Gly
                165                 170                 175
Ala Val His Gln Leu Glu Leu Ala Arg Lys Glu Ile Ala Gly Tyr Ser
            180                 185                 190
Ile Pro Tyr Gly Leu Ser Leu Phe Phe Arg Ala Gly Leu Leu Arg Gln
        195                 200                 205
His Gly Gly Lys Ala Glu Asp Gly Leu Arg Ile His Thr Leu Phe Ala
    210                 215                 220
Asn Leu Arg Glu Asn Ile Gln Lys Pro Asp Tyr Leu Pro Arg Leu Val
225                 230                 235                 240
Arg Lys Tyr Phe Leu Asp Asn Pro His Tyr Ala Arg Val Ile Phe Leu
                245                 250                 255
Pro Asp Ser Gln Leu Ile Ala Gln Glu Asn Lys Glu Glu Arg Asn Val
            260                 265                 270
Leu His Thr Ile Gln Met Gln Met Ser Glu Glu Glu Leu Glu Arg Val
        275                 280                 285
Glu Ala Val Ser Lys Arg Leu Glu Ala Tyr Gln Ser Gln Glu Glu Asp
    290                 295                 300
<210>555
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<212>PRT
<213>Chlamydia trachomatis
<400>555
Trp Ser Gly Ser Arg Thr Arg Ala Tyr Gly Leu Met Xaa Xaa Ser Glu
  1               5                  10                  15
Ser Tyr Pro Ile Arg Asp Pro Phe Phe Ser Met Thr Arg Arg Ser Leu
            20                  25                  30
Asn Thr Phe Met Asn Ala Phe Thr Gly Ala Asp Phe Thr Cys Tyr Pro
        35                  40                  45
Ala Ala Ser Gln Ile Pro Glu Asp Phe Tyr Asn Leu Leu Ser Val Tyr
    50                  55                  60
Ile Asp Ala Val Phe His Pro Leu Leu Thr Glu Asn Ser Phe Leu Gln
65                  70                  75                  80
Glu Ala Trp Arg Tyr Glu Arg Thr Glu Glu Gly Asn Leu Ser Tyr Thr
                85                  90                  95
Gly Ile Val Phe Asn Glu Met Lys Gly Ala Leu Met Ser Gly Glu Ser
            100                 105                 110
Arg Leu Ser Glu Val Arg Met Pro His Cys Ser Leu Arg Ser Leu Thr
        115                 120                 125
Val

<210>556
<211>92
<212>PRT
<213>Chlamydia trachomatis
<400>556
Lys Ile Glu Trp Asp Met Lys Thr Gly Asp Thr Tyr Arg Asn Phe Val
  1               5                  10                  15
Val Lys Leu Ser Gln Asp Leu Pro Glu Ile Glu Ser Lys Leu Ile Glu
            20                  25                  30
Val Glu His Thr Pro Thr Gly Ala Thr Ile Met Met Ile Val Asn Asp
        35                  40                  45
Asp Asp Glu Asn Val Phe Asn Ile Ser Phe Arg Thr Cys Pro Gln Asp
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     50                  55                  60
Ser Ser Gly Val Ala His Val Leu Glu His Met Ala Leu Cys Xaa Gly
 65                  70                  75                  80
Leu Arg Val Thr Gln Phe Gly Ile Leu Phe Ser Gln
                 85                  90
<210>557
<211>491
<212>PRT
<213>Chlamydia trachomatis
<400>557
Val Cys Cys Tyr Arg Thr Ser Val Phe Ser Ser Pro Met Leu Gly Tyr
  1               5                  10                  15
Ser Ala Ser Lys Lys Asp Ser Lys Ala Asp Ile Cys Leu Ala Val Ser
            20                  25                  30
Ser Gly Asp Gln Glu Val Ser Gln Glu Asp Leu Leu Lys Glu Val Ser
        35                  40                  45
Arg Gly Phe Ser Arg Val Ala Ala Lys Ala Thr Pro Gly Val Val Tyr
     50                  55                  60
Ile Glu Asn Phe Pro Lys Thr Gly Asn Gln Ala Ile Ala Ser Pro Gly
 65                  70                  75                  80
Asn Lys Arg Gly Phe Gln Glu Asn Pro Phe Asp Tyr Phe Asn Asp Glu
                 85                  90                  95
Phe Phe Asn Arg Phe Phe Gly Leu Pro Ser Tyr Arg Glu Gln Gln Arg
            100                 105                 110
Pro Gln Gln Arg Asp Ala Val Arg Gly Thr Gly Phe Ile Val Ser Glu
        115                 120                 125
Asp Gly Tyr Val Val Thr Asn His His Val Val Glu Asp Ala Gly Lys
    130                 135                 140
Ile His Val Thr Leu His Asp Gly Gln Lys Tyr Thr Ala Lys Ile Val
145                 150                 155                 160
Gly Leu Asp Pro Lys Thr Asp Leu Ala Val Ile Lys Ile Gln Ala Glu
                165                 170                 175
Lys Leu Pro Phe Leu Thr Phe Gly Asn Ser Asp Gln Leu Gln Ile Gly
            180                 185                 190
Asp Trp Ala Ile Ala Ile Gly Asn Pro Phe Gly Leu Gln Ala Thr Val
        195                 200                 205
Thr Val Gly Val Val Ser Ala Lys Gly Arg Asn Gln Leu His Ile Val
    210                 215                 220
Asp Phe Glu Asp Phe Ile Gln Thr Asp Ala Ala Ile Asn Pro Gly Asn
225                 230                 235                 240
Ser Gly Gly Pro Leu Leu Asn Ile Asn Gly Gln Val Ile Gly Val Asn
                245                 250                 255
Thr Ala Ile Val Ser Gly Ser Gly Gly Tyr Ile Gly Ile Gly Phe Ala
            260                 265                 270
Ile Pro Ser Leu Met Ala Lys Arg Val Ile Asp Gln Leu Ile Ser Asp
        275                 280                 285
Gly Gln Val Thr Arg Gly Phe Leu Gly Val Thr Leu Gln Pro Ile Asp
    290                 295                 300
Ser Glu Leu Ala Thr Cys Tyr Lys Leu Glu Lys Val Tyr Gly Ala Leu
305                 310                 315                 320
Val Thr Asp Val Val Lys Gly Ser Pro Ala Glu Lys Ala Gly Leu Arg
                325                 330                 335
Gln Glu Asp Val Ile Val Ala Tyr Asn Gly Lys Glu Val Glu Ser Leu
            340                 345                 350
Ser Ala Leu Arg Asn Ala Ile Ser Leu Met Met Pro Gly Thr Arg Val
        355                 360                 365
Ile Leu Lys Ile Val Arg Glu Gly Lys Thr Ile Glu Ile Pro Val Thr
    370                 375                 380
Val Thr Gln Ile Pro Thr Glu Asp Gly Val Ser Ala Leu Gln Lys Met
385                 390                 395                 400
Gly Val Arg Val Gln Asn Ile Thr Pro Glu Ile Cys Lys Lys Leu Gly
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405 410 415
Leu Ala Ala Asp Thr Arg Gly Ile Leu Val Val Ala Val Glu Ala Gly
420 425 430
Ser Pro Ala Ala Ser Ala Gly Val Ala Pro Gly Gln Leu Ile Leu Ala
435 440 445
Val Asn Arg Gln Arg Val Ala Ser Val Glu Glu Leu Asn Gln Val Leu
450 455 460
Lys Asn Ser Lys Gly Glu Asn Val Leu Leu Met Val Ser Gln Gly Asp
465 470 475 480
Val Val Arg Phe Ile Val Leu Lys Ser Asp Glu
485 490

<210>558
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<212>PRT
<213>Chlamydia trachomatis
<400>558
Val Val Ser Trp Glu Arg Asn Cys Val Arg Ile Ile Lys Gln Gly Phe
1 5 10 15
Thr Asp Tyr Tyr Thr Gly Tyr Tyr Arg Glu Ser Arg Val Phe Ser His
20 25 30
Tyr Thr Met Cys Arg Phe Thr Asp Leu Thr Phe Val Gly Gly Val Thr
35 40 45
Pro Gly Lys Gly Gly Ser Gln Phe Leu Asp Leu Pro Ile Phe Asp Ser
50 55 60
Val Leu Glu Ala Lys Arg Ala Thr Gly Cys Arg Ala Ser Met Ile Phe
65 70 75 80
Val Pro Pro Pro Phe Ala Ala Glu Ala Ile Phe Glu Ala Glu Asp Xaa
85 90 95
Gly Ile Glu Leu Ile Val Cys Ile Thr Glu Gly Ile Pro Ile Lys Asp
100 105 110
Met Leu Glu Val Ala Ser Leu Met Glu Lys Ser Ala Ser Ser Leu Ile
115 120 125
Gly Pro Asn Cys Pro Gly Val Ile Lys Pro Gly Val Cys Lys Ile Gly
130 135 140
Ile Met Pro Gly Tyr Ile His Leu Pro Gly Lys Val Gly Val Val Ser
145 150 155 160
Xaa Ser Gly Thr Leu Thr Tyr Glu Ala Val Trp Gln Leu Thr Gln Arg
165 170 175
Lys Ile Gly Gln Ser Val Cys Ile Gly Ile Gly Gly Asp Pro Leu Asn
180 185 190
Gly Thr Ser Phe Ile Asp Ala Leu Gln Glu Phe Glu Lys Asp Ser Gln
195 200 205
Thr Glu Ala Val Leu Met Ile Gly Glu Ile Gly Gly Ser Ala Glu Glu
210 215 220
Glu Ala Ala Asp Trp Ile Arg Gln His Ser Ser Lys Pro Val Ile Ala
225 230 235 240
Phe Ile Ala Gly Ala Thr Ala Pro Lys Gly Lys Arg Met Gly His Ala
245 250 255
Gly Ala Ile Ile Ser Gly Lys Ser Gly Asp Ala Phe Ser Lys Gln Glu
260 265 270
Ala Leu Arg Gln Ala Gly Val Thr Val Val Glu Phe Pro Ala Leu Ile
275 280 285
Gly Glu Ala Val Ala Ser Val Leu Lys Pro Arg
290 295

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<212>PRT
<213>Chlamydia trachomatis
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Arg Ile Gln Ser Ala Ala Ser Ser Ser Ala Leu Pro Pro Ile Ser Pro
1 5 10 15

Ile Ile Arg Thr Ala Ser Val Trp Leu Ser Phe Ser Asn Ser Trp Arg
20 25 30
Ala Ser Ile Lys Asp Val Pro Phe Lys Gly Ser Pro Pro Ile Pro Ile
35 40 45
His Thr Leu Cys Pro Ile Phe Leu Cys Val Ser Cys Gln Thr Ala Ser
50 55 60
Tyr Val Ser Val Pro Asp Xaa Glu Thr Thr Pro Thr Phe Pro Gly Arg
65 70 75 80
Trp Ile Tyr Pro Gly Met Met Pro Ile Leu Gln Thr Pro Gly Leu Ile
85 90 95
Thr Pro Gly Gln Phe Gly Pro Ile Lys Glu Leu Ala Leu Phe Ser Ile
100 105 110
Arg Glu Ala Thr Ser Ser Ile Ser Leu Ile Gly Ile Pro Ser Val Ile
115 120 125
Gln Thr Ile Ser Ser Ile Pro Xaa Ser Ser Ala Ser Lys Met Ala Ser
130 135 140
Ala Ala Asn Gly Gly Gly Thr Lys Ile Ile Glu Ala Arg Gln Pro Val
145 150 155 160
Ala Arg Leu Ala Ser Lys Thr Glu Ser Lys Met Gly Lys Ser Lys Asn
165 170 175
Trp Leu Pro Pro Phe Pro Gly Val Thr Pro Pro Thr Lys Val Arg Ser
180 185 190
Val Lys Arg His Ile Val
195

<210>560
<211>142
<212>PRT
<213>Chlamydia trachomatis
<400>560
Pro Lys Gln Leu Gly Leu Ser Tyr Ile Ala Leu Asp Gly Thr Ile Gly
1 5 10 15
Cys Leu Val Asn Gly Ala Gly Leu Ala Met Ser Thr Leu Asp Ile Leu
20 25 30
Lys Leu Tyr Gly Gly Ser Ala Ala Asn Phe Leu Asp Val Gly Gly Ser
35 40 45
Ala Ser Glu Lys Gln Ile Gln Glu Ala Ile Ser Leu Val Leu Ser Asp
50 55 60
Lys Ser Val Arg Val Leu Phe Ile His Ile Phe Gly Gly Ile Met Asp
65 70 75 80
Cys Ala Val Val Ala Ser Gly Leu Val Ser Ala Met Gln Gly Gln Lys
85 90 95
Glu Thr Ile Pro Thr Val Ile Arg Leu Glu Gly Thr Asn Val Asp Lys
100 105 110
Gly Lys Gly Met Ile Ile Asn Ala Gly Ile Pro Cys Glu Phe Val Thr
115 120 125
Ser Met Ser Glu Gly Ala Glu Leu Ala Val Gln Leu Ser Arg
130 135 140

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<212>PRT
<213>Chlamydia trachomatis
<400>561
Met His Leu His Glu Tyr Gln Ala Lys Asp Leu Leu Thr Ala Tyr Gln
1 5 10 15
Leu Pro Ile Pro Pro Tyr His Val Ala Thr Ser Val Pro Glu Val Glu
20 25 30
Ala Ala Ile Gln Ala Glu Gln Trp Lys Ala Gly Val Val Lys Ala Gln
35 40 45
Val His Ala Gly Gly Arg Gly Lys Asn Gly Gly Val Val Ile Ala His
50 55 60
Ser Pro Glu Asp Leu Leu Ala Ala Ala Asp Lys Leu Leu His Met Gln

```
 65                  70                  75                  80
Phe Ser Ser Asn Gln Thr Ala Gly Leu Ser Leu Pro Val Asn Lys Val
                85                  90                  95
Leu Ile Ser Pro Leu Val Glu Ile Ala Ser Glu Tyr Tyr Leu Ala Ile
            100                 105                 110
Val Ile Asp Arg Lys His Arg Cys Pro Val Ile Met Leu Ser Lys Ala
        115                 120                 125
Gly Gly Val Asp Ile Glu Glu Val Ala Glu Lys Gln Pro Asp Gln Leu
    130                 135                 140
Leu Lys Met Thr Leu Pro Ser Ser Gly Lys Ile Tyr Gly Tyr Gln Leu
145                 150                 155                 160
Arg Arg Ile Ala Lys Phe Met Glu Trp Asp Gln Pro Ile Ala Asp Gln
                165                 170                 175
Gly Asn Arg Ile Ile Arg Gln Leu Leu Gln Cys Phe Tyr Glu Lys Asp
            180                 185                 190
Ala Ser Leu Leu Glu Ile Asn Pro Leu Val Leu Thr Lys Asp Gly Ser
        195                 200                 205
Leu Val Ile Leu Asp Ala Lys Met Thr Ile Asp Asp Asn Ala Leu Tyr
    210                 215                 220
Arg His Pro Glu Leu Ala Asp Cys Tyr Asp Pro Ser Gln Glu Asn Ile
225                 230                 235                 240
Arg Asp Val Leu Ala
                245
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<210>562
<211>256
<212>PRT
<213>Chlamydia trachomatis
<400>562

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Phe Lys Arg Thr Leu Ser Ser Asp Leu Leu Glu Tyr Ala Glu Val Leu
             20                  25                  30
Leu Tyr Glu Gly Asp Phe Gly Pro Lys Leu Thr Glu Ala Phe Cys Glu
         35                  40                  45
Glu Leu Arg Arg Cys Lys Asn Pro Asp Glu Arg Ala Val Lys Glu Leu
     50                  55                  60
Ile Arg Ser Phe Leu Ser Lys Ile Ile Ser Lys Leu Pro Gln Arg Glu
 65                  70                  75                  80
Pro Leu Ser Val Arg Pro Phe Ser Thr Leu Val Leu Gly Thr Asn Gly
                85                  90                  95
Ser Gly Lys Thr Thr Thr Val Ala Lys Leu Ala His Tyr Tyr Leu Ser
            100                 105                 110
Gln Asn Gln Lys Val Leu Ile Val Ala Thr Asp Thr Phe Arg Ser Ala
        115                 120                 125
Gly Met Asp Gln Met Arg Cys Trp Ala Glu Thr Leu Asn Cys Gly Phe
    130                 135                 140
Ile Ser Gly Lys Pro Gly Gly Asp Ala Ala Ala Ile Ala Phe Asp Gly
145                 150                 155                 160
Ile Ser Ala Ala Val Ala Arg Asp Tyr Asp His Val Ile Ile Asp Thr
                165                 170                 175
Ser Gly Arg Leu His Thr His Thr Asn Leu Leu Lys Glu Leu Gln Lys
            180                 185                 190
Ile Ala Thr Val Cys Asn Lys Ala Phe Pro Gly Ala Pro His Glu Thr
        195                 200                 205
Leu Met Thr Ile Asp Ala Thr Leu Gly Ser Asn Thr Ile Glu Ser Gly
    210                 215                 220
Cys Asn Tyr Ser Met Lys Pro Tyr Leu Ser Lys Trp Thr Tyr Phe His
225                 230                 235                 240
Lys Ser Gly Arg Phe Cys Gln Arg Arg Leu Ser Leu Pro Tyr Arg Arg
                245                 250                 255
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<210>563

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<211>241
<212>PRT
<213>Chlamydia trachomatis
<400>563

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Leu Pro Gly Thr Phe Ser Ser Arg Val Tyr Gly Trp Met Thr Ala Gly
             20                  25                  30
Leu Ala Val Thr Ala Leu Thr Ser Leu Gly Leu Tyr Ala Thr Gly Ala
         35                  40                  45
Tyr Arg Ala Leu Phe Pro Met Trp Trp Ile Trp Cys Phe Ala Thr Leu
     50                  55                  60
Gly Val Ser Phe Tyr Ile Gln Ala Gln Ile Gln Lys Leu Ser Val Pro
 65                  70                  75                  80
Ala Val Met Gly Leu Phe Leu Ala Tyr Ser Ile Leu Glu Gly Met Phe
                 85                  90                  95
Phe Gly Thr Leu Val Pro Val Tyr Ala Ala Gln Phe Gly Gly Gly Val
            100                 105                 110
Val Trp Ala Ala Phe Gly Ser Ala Gly Ile Ile Phe Gly Leu Ser Ala
        115                 120                 125
Ala Tyr Gly Ala Phe Thr Lys Asn Asp Leu Thr Gln Ile His Arg Ile
    130                 135                 140
Leu Met Leu Ala Leu Val Gly Leu Val Val Ile Ser Leu Ala Phe Leu
145                 150                 155                 160
Ile Val Ser Leu Phe Thr Pro Met Pro Leu Leu Tyr Leu Leu Ile Cys
                165                 170                 175
Tyr Leu Gly Leu Ile Ile Phe Val Gly Leu Thr Val Val Asp Ala Gln
            180                 185                 190
Ser Ile Arg Arg Val Ala Arg Ser Val Gly Asp His Gly Asp Leu Ser
        195                 200                 205
Tyr Lys Leu Ser Leu Ile Met Ala Leu Gln Met Tyr Cys Asn Val Ile
    210                 215                 220
Met Ile Phe Trp Tyr Leu Leu Gln Ile Phe Ala Ser Ser Asp Lys Arg
225                 230                 235                 240
Arg
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<210>564
<211>397
<212>PRT
<213>Chlamydia trachomatis
<400>564

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Met Cys Met Arg Asn Lys Cys Val Gly Gly Ile Leu Ile Val Ala Gly
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Thr Val Ile Gly Ala Gly Val Leu Ala Val Pro Ile Leu Thr Ala Val
             20                  25                  30
Glu Gly Phe Phe Pro Ala Val Val Leu Tyr Val Leu Ala Trp Leu Val
         35                  40                  45
Ser Leu Ala Ser Gly Tyr Gly Tyr Leu Glu Val Leu Thr Trp Cys Lys
     50                  55                  60
Gly Asn Arg Gln Ala Asn Leu Cys Ser Met Ala Glu Glu Thr Leu Gly
 65                  70                  75                  80
Arg Val Gly Arg Ile Val Leu Cys Leu Val Tyr Leu Phe Leu Phe Tyr
                 85                  90                  95
Ser Leu Leu Val Ala Tyr Phe Cys Asp Gly Gly Asn Ile Leu Ser Arg
            100                 105                 110
Val Ile Gly Glu Ser Phe Phe Ser Tyr Pro Trp Met Arg His Val Met
        115                 120                 125
Pro Leu Leu Phe Phe Ser Leu Phe Ala Pro Leu Leu Met Ala Asn Thr
    130                 135                 140
Ser Val Ile Asp Tyr Cys Asn Arg Gly Phe Val Phe Gly Leu Ile Phe
145                 150                 155                 160
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Val Phe Gly Leu Phe Cys Val Leu Gly Val Pro Arg Ile Gln Gly Glu
                165                 170                 175
Leu Leu Leu Arg Ala Ser Trp Phe Ser Ser Leu Asn Ser Leu Pro Ile
            180                 185                 190
Phe Phe Leu Ala Phe Gly Phe Gln Asn Val Val Pro Ser Leu Tyr His
        195                 200                 205
Tyr Leu Asp Gly Asn Ile Arg Glu Val Lys Arg Ala Ile Leu Ile Gly
    210                 215                 220
Ser Leu Ile Pro Leu Ile Leu Tyr Ile Ala Trp Glu Ala Leu Val Leu
225                 230                 235                 240
Gly Thr Val Pro Leu Val Asp Leu Leu Lys Ala Lys Asp Leu Gly Trp
                245                 250                 255
Thr Ala Ala Gly Ala Leu Gln Gly Ser Leu Lys Asn Ser Ala Phe Tyr
            260                 265                 270
Ile Ala Gly Glu Leu Phe Gly Phe Phe Ala Leu Val Thr Ser Phe Ile
        275                 280                 285
Gly Thr Ala Leu Ala Leu Lys Asp Phe Tyr Ile Asp Ile Phe Lys Trp
    290                 295                 300
Asp Ala Arg Lys Lys Arg Val Ser Leu Phe Phe Leu Val Gln Val Phe
305                 310                 315                 320
Pro Leu Val Trp Ala Ile Phe Tyr Pro Glu Ile Val Leu Ser Cys Leu
                325                 330                 335
Arg Tyr Ala Gly Gly Ile Gly Gly Ala Cys Ile Val Val Leu Phe Pro
            340                 345                 350
Val Ala Met Leu Trp Asn Gly Arg Tyr Gly Lys Arg Arg Cys Phe Gly
        355                 360                 365
Lys Arg Ile Leu Pro Gly Gly Lys Thr Val Leu Leu Ile Leu Thr Gly
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Tyr Thr Val Leu Asn Leu Ala Thr Leu Tyr Tyr Ala Phe
385                 390                 395
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Thr Ile Gly Ala Gly Val Leu Ala Val Pro Val Ser Thr Ser Glu Gly
         35                  40                  45
Gly Phe Leu Pro Thr Thr Leu Leu Tyr Ile Val Ser Trp Phe Ile Ala
     50                  55                  60
Val Ala Ser Gly Tyr Cys Phe Leu Glu Val Leu Thr Trp Thr His Ser
 65                  70                  75                  80
Arg Lys Asn Val Asn Met Val Ser Leu Ala Glu Tyr Thr Leu Gly His
                 85                  90                  95
Lys Ser Lys Ile Ile Met Trp Leu Ile Tyr Leu Leu Leu Phe Tyr Ser
            100                 105                 110
Leu Leu Val Ala Tyr Phe Cys Asp Gly Gly Asn Ile Leu Met Arg Val
        115                 120                 125
Met Gly Cys Arg Ser Trp Asp Thr Pro Trp Ile Arg His Ala Met Pro
    130                 135                 140
Val Val Phe Phe Ala Leu Phe Ser Pro Leu Leu Met Ala Lys Thr Ser
145                 150                 155                 160
Ile Ile Asp Gln Cys Asn Arg Val Phe Val Phe Gly Leu Gly Ile Ala
                165                 170                 175
Phe Ala Met Phe Cys Tyr Phe Gly Phe Pro Leu Met Lys Thr Asp Leu
            180                 185                 190
Leu Val Arg Ser Ala Trp Gly Ala Thr Leu Lys Gly Phe Pro Ile Leu
        195                 200                 205
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Phe Leu Ala Phe Gly Phe Gln Asn Val Val Pro Thr Leu Tyr His Tyr
210 215 220
Met Asp Lys Asn Val Lys Asp Val Lys Lys Ala Ile Val Ile Gly Ser
225 230 235 240
Ser Ile Pro Leu Val Leu Tyr Ile Ile Trp Glu Ala Ile Val Leu Gly
245 250 255
Ala Val Pro Ile Ser Phe Leu Glu Gln Ala Lys Val Glu Gly Trp Thr
260 265 270
Ala Ile Gly Ala Leu Gln Thr Ala Leu Lys Cys Ala Ala Phe Tyr Val
275 280 285
Ala Gly Glu Phe Phe Gly Phe Phe Ala Leu Ile Ser Ser Phe Ile Gly
290 295 300
Val Ser Leu Gly Leu Lys Asp Phe Phe Ile Asp Ala Phe Gln Trp Asp
305 310 315 320
Glu Lys Lys Arg Lys Val Glu Ile Phe Phe Leu Val Phe Val Phe Pro
325 330 335
Leu Val Trp Ala Val Phe Tyr Pro Gly Ile Val Leu Lys Cys Leu Glu
340 345 350
Cys Thr Gly Ala Leu Gly Glu Thr Ile Val Leu Gly Val Cys Pro Val
355 360 365
Leu Met Val Trp Lys Gly Arg Tyr Gly Lys Lys Arg Tyr Tyr Gly Lys
370 375 380
Arg Ile Leu Pro Gly Gly Lys Gly Thr Leu Leu Val Met Ser Gly Leu
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Val Leu Leu Asn Leu Val Leu Ile Ala Gln Lys Phe Leu Gly Tyr
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35 40 45
Ile Glu Gly Arg Leu Phe Val Glu Lys Ala Val Gly Pro Val Ser Gln
50 55 60
Leu Cys Ser Ala Val Ser Ser Asp Ile His Ser Gln Ala Ala Ile Gly
65 70 75 80
His Thr Arg Trp Ala Thr His Gly Glu Pro Ser Arg Phe Asn Ala His
85 90 95
Pro His Ile Asp Met Asp Ala Ser Cys Ala Leu Val His Asn Gly Ile
100 105 110
Ile Glu Asn Phe Gln Lys Leu Lys Glu Glu Leu Glu Glu Gln Gly Val
115 120 125
Val Phe Ser Ser Asp Thr Asp Thr Glu Val Ile Val Gln Leu Phe Ala
130 135 140
Arg Arg Tyr Lys Glu Thr Arg Asp Leu Ile Gln Ser Phe Ser Trp Thr
145 150 155 160
Leu Lys Arg Leu Gln Gly Ser Phe Ala Cys Ala Leu Met His Gln Asp
165 170 175
His Pro Glu Val Leu Leu Cys Ala Ala His Glu Ser Pro Leu Ile Leu
180 185 190
Gly Leu Gly Glu Asp Glu Val Phe Ile Ser Ser Asp Ile His Ala Phe
195 200 205
Leu Lys Tyr Ser Gly Cys Thr Gln Thr Leu Ala Ser Gly Glu Leu Val
210 215 220
Val Leu Arg Ile Gly Lys Ser Ile Glu Thr Tyr Asn Phe Glu Leu Ala
225 230 235 240

Arg Ile Gln Lys Glu Val Arg Cys Ile Asp His Thr Glu Asp Ser Leu
245 250 255
Asp Lys Lys Gly Phe Asp Tyr Tyr Met Leu Lys Glu Ile Tyr Glu Gln
260 265 270
Pro Glu Val Phe Glu Arg Ile Leu His Leu Thr Cys Glu Glu Asn Ser
275 280 285
Phe Thr Glu Ser Phe Leu Lys Gly Phe Ser Leu Asp Glu Ile Gln Ser
290 295 300
Leu His Ile Val Ala Cys Gly Ser Ser Tyr His Ala Gly Tyr Leu Ala
305 310 315 320
Lys Tyr Val Ile Glu Ser Ile Ala Ser Ile Pro Val Tyr Val Glu Ile
325 330 335
Ala Ser Glu Phe Arg Tyr Arg Gln Pro Tyr Ile Ala Glu His Ser Leu
340 345 350
Ala Ile Leu Ile Ser Gln Ser Gly Glu Thr Ala Asp Thr Leu Ala Ala
355 360 365
Leu Asn Glu Phe Arg Lys Leu Ser Lys Ala Arg Val Leu Gly Ile Cys
370 375 380
Asn Val Arg Glu Ser Ala Leu Ala Ser Arg Val Asp His Cys Leu Phe
385 390 395 400
Ile Glu Ala Gly Leu Glu Val Gly Val Ala Ser Thr Lys Ala Phe Thr
405 410 415
Ala Gln Leu Leu Leu Leu Ile Leu Leu Gly Leu Arg Leu Ala Asn His
420 425 430
Arg Gln Val Ile Ala Gln Glu Asp Leu Ala Gln Ala Ile Gln Gly Leu
435 440 445
Lys Asp Leu Pro Asn Leu Thr Arg Leu Phe Leu Asp Ser Ser Ile His
450 455 460
Asp Trp Arg Cys Arg Gln Ile Glu Glu Thr Ser Phe Ile Phe Leu Gly
465 470 475 480
Arg Arg Phe Met Tyr Pro Ile Cys Met Glu Ala Ala Leu Lys Leu Lys
485 490 495
Glu Ile Ala Tyr Val Glu Ala Asn Ala Tyr Pro Ala Gly Glu Met Lys
500 505 510
His Gly Pro Ile Ala Leu Ile Arg Glu Gly Thr Pro Val Ile Val Tyr
515 520 525
Cys Gly Asp Arg Ser Val Tyr Thr Lys Thr Ile Gly Ala Ile Met Glu
530 535 540
Val Lys Ala Arg Lys Ala Tyr Val Ile Ala Leu Ala Pro Glu Ser Asn
545 550 555 560
Arg Asp Ile Ala Ala Val Ser Asp Glu Gln Ile Tyr Ile Pro Asp Ser
565 570 575
His Asp Leu Ala Ala Pro Ile Leu Phe Thr Ile Ala Gly Gln Ile Met
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Ala Tyr Thr Met Ala Leu Gln Arg Gly Thr Glu Val Asp Arg Pro Arg
595 600 605
Asn Leu Ala Lys Ser Val Thr Val Glu
610 615

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<213>Chlamydia trachomatis
<400>567
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20 25 30
Lys Ala Ile Ala Gly Val Leu Leu Glu Lys His Ala Gly Lys His Arg
35 40 45
Val Val Val Gly Lys Asp Thr Arg Leu Ser Gly Tyr Met Phe Glu Asn
50 55 60

Ala Leu Ile Ala Gly Leu Thr Ser Met Gly Ile Glu Thr Leu Met Leu
65 70 75 80
Gly Pro Ile Pro Thr Pro Gly Val Ala Phe Ile Thr Arg Ala Tyr Arg
85 90 95
Ala Asp Ala Gly Ile Met Ile Ser Ala Ser His Asn Pro Tyr Arg Asp
100 105 110
Asn Gly Ile Lys Ile Phe Ser Ser Asp Gly Phe Lys Ile Gly Gln Ala
115 120 125
Val Glu Glu Arg Ile Glu Ala Met Val Ala Ser Lys Asp Phe Gly Lys
130 135 140
Leu Pro Asp Asp His Ala Val Gly Lys Asn Lys Arg Val Lys Asp Ala
145 150 155 160
Thr Gly Arg Tyr Ile Glu Tyr Ala Lys Ala Thr Phe Pro Lys Gly Arg
165 170 175
Thr Leu Lys Gly Leu Arg Ile Val Leu Asp Cys Ala His Gly Ala Thr
180 185 190
Tyr Arg Val Ala Pro Ser Val Phe Glu Glu Leu Asp Ala Glu Val Ile
195 200 205
Cys Tyr Gly Cys Glu Pro Ser Gly Cys Asn Ile Asn Ala Gly Cys Gly
210 215 220
Ala Leu Trp Pro Ser Thr Ile Gln Lys Ala Val Ile Glu His Lys Ala
225 230 235 240
Asp Val Gly Ile Ala Leu Asp Gly Asp Gly Asp Arg Leu Ile Met Val
245 250 255
Asp Glu Lys Gly His Ile Val Asp Gly Asp Met Leu Leu Ser Ile Cys
260 265 270
Ala Ser Asp Leu Lys Arg Arg Gln Ala Leu Pro Asp Asn Arg Val Val
275 280 285
Ala Thr Val Met Thr Asn Phe Gly Val Leu Arg Tyr Leu Glu Ser Leu
290 295 300
Gly Ile Gln Val Thr Ile Ser Pro Val Gly Asp Arg His Val Leu Gln
305 310 315 320
His Met Leu Glu Asn Gln Ala Val Leu Gly Gly Glu Gln Ser Gly His
325 330 335
Met Ile Phe Leu Asp Tyr Asn Thr Thr Gly Asp Gly Ile Val Ser Ala
340 345 350
Leu Gln Val Leu Arg Ile Met Ile Glu Ser Glu Ser Thr Leu Ser Asp
355 360 365
Leu Thr Ala Cys Ile Val Lys Ser Pro Gln Ala Leu Ile Asn Val Pro
370 375 380
Val Thr Lys Lys Val Pro Leu Glu Ser Leu Ala Asn Val Gln Gly Val
385 390 395 400
Leu Lys Glu Val Lys Glu Val Leu Gly Asp Ser Gly Arg Ile Leu Leu
405 410 415
Arg Tyr Ser Gly Thr Glu Asn Ile Cys Arg Val Met Val Glu Gly Thr
420 425 430
Lys Lys His Gln Val Asp Ser Leu Ala Lys Thr Ile Val Asp Val Val
435 440 445
Glu Ala Glu Ile Gly Ala Gly Ile Ser Glu
450 455

<210>568
<211>127
<212>PRT
<213>Chlamydia trachomatis
<400>568
Met Ile Tyr Phe Phe Val Phe Met Thr Pro Tyr Leu Ile Glu Ala Leu
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Val Ala Cys Cys Ile Leu Leu Ser Leu Gly Met Val Leu Ile Phe Ala
20 25 30
Phe Thr Ile Cys Leu Leu Leu Lys Leu His Lys Ile Met Lys Leu Val
35 40 45

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Ser Arg Ile Ser Ser Leu Phe Asn Phe Glu Ala Arg Trp Leu Ala Pro
     50                  55                  60
Leu Leu Ile Gly Lys Lys Phe Ile Leu Asn Trp Leu Arg Lys Lys Tyr
 65                  70                  75                  80
Ala Asp Arg Lys Met Ser Gln Leu Ala Asp Glu Leu Glu Asp Asn Glu
                 85                  90                  95
Asp Ser Glu Asn Ser Cys Ser Ser Arg Leu Leu Cys Gly Ala Lys Leu
            100                 105                 110
Ala Ala Ile Ala Leu Cys Ala Trp Leu Leu Ile Arg Lys Lys Asp
        115                 120                 125
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<213>Chlamydia trachomatis
<400>569
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            20                  25                  30
Lys Gln Ile Gln Gly Ser Arg Lys Asp Pro Leu Ala Lys Thr Ser Trp
        35                  40                  45
Ile Ala Gly Leu Ile Cys Val Val Ala Gly Val Leu Gly Leu Leu Ala
     50                  55                  60
Ile Gly Ile Gly Gly Cys Ser Met Ala Ser Gly Leu Gly Leu Ile Gly
 65                  70                  75                  80
Ala Ile Ile Ala Ala Val Val Val Ala Val Gly Leu Cys Cys Leu Val
                 85                  90                  95
Ser Ala Leu Cys Leu Xaa Val Glu Lys Ser Gln Trp Trp Gln Lys Glu
            100                 105                 110
Phe Lys Ser Trp Ile Glu Gln Lys Ser Gln Phe Arg Ile Val Met Ala
        115                 120                 125
Asp Met Leu Glu Ala Asn Gln Lys Leu Gln Ser Glu Val Glu Phe Leu
    130                 135                 140
Ser Lys Gly Trp Ser Asp Ala Ala Ala Val His Lys Glu Asp Val Thr
145                 150                 155                 160
Lys Tyr Glu Gln Val Val Glu Lys Tyr Gly Glu Lys Ile Met Lys Leu
                165                 170                 175
Tyr Lys Gln Thr Gly Val Leu Thr Ile Glu Lys Val Asn Leu Gln Lys
            180                 185                 190
Glu Lys Lys Thr Trp Leu Glu Glu Lys Ala Glu Met Glu Gln Lys Leu
        195                 200                 205
Thr Thr Val Thr Asp Leu Glu Ala Ala Lys Gln Gln Leu Glu Glu Lys
    210                 215                 220
Val Thr Asp Leu Glu Ser Glu Lys Gln Glu Leu Arg Glu Glu Leu Asp
225                 230                 235                 240
Lys Ala Thr Glu Asn Leu Asp Glu Met Ala His Glu Ala Met Glu Phe
                245                 250                 255
Glu Lys Glu Lys His Gly Ile Lys Pro Gly Arg Arg Gly Ser Ile
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<213>Chlamydia trachomatis
<400>570
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Thr Ala Thr Thr Thr Ala Ala Ile Ile Ala Pro Ile Asn Pro Asn Pro
            20                  25                  30
Glu Ala Ile Glu His Pro Pro Ile Pro Ile Ala Arg Ser Pro Asn Thr
        35                  40                  45
Pro Ala Thr Thr Gln Ile Asn Pro Ala Ile His Glu Val Leu Ala Arg
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     50                  55                  60
Gly Ser Phe Arg Glu Pro Trp Ile Cys Phe Ala Ile Ser Ile Ser Xaa
 65                  70                  75                  80
Val Lys Val Phe Ile Glu Leu Glu Phe Glu Val Gln Val Leu Gly Arg
                85                  90                  95
Val Val Ile Glu Ser Pro Leu Asn Asp Arg His Ala Asp Gly Pro Lys
            100                 105                 110
Lys Gln Pro Gln Thr Tyr Phe Cys Thr Asn Phe Cys Phe Leu Ala Lys
        115                 120                 125
Lys Lys Glu Arg Phe Tyr Leu Leu Leu Asn Leu Leu Thr Ser
    130                 135                 140
<210>571
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<212>PRT
<213>Chlamydia trachomatis
<400>571
Lys Met His Ala Leu Leu Ile Asn Leu Thr Ala Gln Arg Met Glu Phe
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Asp Tyr Ser Thr Asn Val Trp Gly Phe Ala Phe Gly Gly Phe Arg Thr
            20                  25                  30
Leu Ser Ala Glu Asn Leu Val Ala Ile Asp Gly Tyr Lys Gly Ala Tyr
        35                  40                  45
Gly Gly Ala Ser Ala Gly Val Asp Ile Gln Leu Met Glu Asp Phe Val
     50                  55                  60
Leu Gly Val Ser Gly Ala Ala Phe Leu Gly Lys Met Asp Ser Gln Lys
 65                  70                  75                  80
Phe Asp Ala Glu Val Ser Arg Lys Gly Val Val Gly Ser Val Tyr Thr
                85                  90                  95
Gly Phe Leu Ala Gly Ser Trp Phe Phe Lys Gly Gln Tyr Ser Leu Gly
            100                 105                 110
Glu Thr Gln Asn Asp Met Lys Thr Arg Tyr Gly Val Leu Gly Glu Ser
        115                 120                 125
Ser Ala Ser Trp Thr Ser Arg Gly Val Leu Ala Asp Ala Leu Val Glu
    130                 135                 140
Tyr Arg Ser Leu Val Gly Pro Val Arg Pro Thr Phe Tyr Ala Leu His
145                 150                 155                 160
Phe Asn Pro Tyr Val Glu Val Ser Tyr Ala Ser Met Lys Phe Pro Gly
                165                 170                 175
Phe Thr Glu Gln Gly Arg Glu Ala Arg Ser Phe Glu Asp Ala Ser Leu
            180                 185                 190
Thr Asn Ile Thr Ile Pro Leu Gly Met Lys Phe Glu Leu Ala Phe Ile
        195                 200                 205
Lys Gly Gln Phe Ser Glu Val Asn Ser Leu Gly Ile Ser Tyr Ala Trp
    210                 215                 220
Glu Ala Tyr Arg Lys Val Glu Gly Gly Ala Val Gln Leu Leu Glu Ala
225                 230                 235                 240
Gly Phe Asp Trp Glu Gly Ala Pro Met Asp Leu Pro Arg Gln Glu Leu
                245                 250                 255
Arg Val Ala Leu Glu Asn Asn Thr Glu Trp Ser Ser Tyr Phe Ser Thr
            260                 265                 270
Val Leu Gly Leu Thr Ala Phe Cys Gly Gly Phe Thr Ser Thr Asp Ser
        275                 280                 285
Lys Leu Gly Tyr Glu Ala Asn Ala Gly Leu Arg Leu Ile Phe
    290                 295                 300
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<212>PRT
<213>Chlamydia trachomatis
<400>572
Leu Leu Val Arg Trp Lys Leu Pro Ile Ile Pro Ser Asn Phe Phe Tyr
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Arg Lys Cys Glu Xaa Pro Gln Ala Leu Pro Thr Gln Glu Glu Phe Pro
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Leu Phe Ser Lys Lys Glu Gly Arg Pro Leu Ser Ser Gly Tyr Ser Gly
            35                  40                  45
Gly Gly Ala Ile Leu Gly Arg Glu Val Ala Ile Leu His Asn Ala Ala
        50                  55                  60
Val Val Phe Glu Gln Asn Arg Leu Gln Cys Ser Glu Glu Glu Ala Thr
65                  70                  75                  80
Leu Leu Gly Cys Cys Gly Gly Gly Ala Val His Gly Met Asp Ser Thr
                85                  90                  95
Ser Ile Val Gly Asn Ser Ser Val Arg Phe Gly Asn Asn Tyr Ala Met
            100                 105                 110
Gly Gln Gly Val Ser Gly Gly Ala Leu Leu Ser Lys Thr Val Gln Leu
        115                 120                 125
Ala Gly Asn Gly Ser Val Asp Phe Ser Arg Asn Ile Ala Ser Leu Gly
    130                 135                 140
Gly Gly Ala Leu Gln Ala Ser Glu Gly Asn Cys Glu Leu Val Asp Asn
145                 150                 155                 160
Gly Tyr Val Leu Phe Arg Asp Asn Arg Gly Arg Val Tyr Gly Gly Ala
                165                 170                 175
Ile Ser Cys Leu Arg Gly Asp Val Val Ile Ser Gly Asn Lys Gly Arg
            180                 185                 190
Val Glu Phe Lys Asp Asn Ile Ala Thr Arg Leu Tyr Val Glu Glu Thr
        195                 200                 205
Val Glu Lys Val Glu Glu Val Glu Pro Ala Pro Glu Gln Lys Asp Asn
    210                 215                 220
Asn Glu Leu Ser Phe Leu Gly Ser Val Glu Gln Ser Phe Ile Thr Ala
225                 230                 235                 240
Ala Asn Gln Ala Leu Phe Ala Ser Glu Asp Gly Asp Leu Ser Pro Glu
                245                 250                 255
Ser Ser Ile Ser Ser Glu Glu Leu Ala Lys Arg Arg Glu Cys Ala Gly
            260                 265                 270
Gly Ala Ile Phe Ala Lys Arg Val Arg Ile Val Asp Asn Gln Glu Ala
        275                 280                 285
Val Val Phe Ser Asn Asn Phe Ser Asp Ile Tyr Gly Gly Ala Ile Phe
    290                 295                 300
Thr Gly Ser Leu Arg Glu Glu Asp Lys Leu Asp Gly Gln Ile Pro Glu
305                 310                 315                 320
Val Leu Ile Ser Gly Asn Ala Gly Asp Val Val Phe Ser Gly Asn Ser
                325                 330                 335
Ser Lys Arg Asp Glu His Leu Pro His Thr Gly Gly Gly Ala Ile Cys
            340                 345                 350
Thr Gln Asn Leu Thr Ile Ser Gln Asn Thr Gly Asn Val Leu Phe Tyr
        355                 360                 365
Asn Asn Val Ala Cys Ser Gly Gly Ala Val Arg Ile Glu Asp His Gly
    370                 375                 380
Asn Val Leu Leu Glu Ala Phe Gly Gly Asp Ile Val Phe Lys Gly Asn
385                 390                 395                 400
Ser Ser Phe Arg Ala Gln Gly Ser Asp Ala Ile Tyr Phe Ala Gly Lys
                405                 410                 415
Glu Ser His Ile Thr Ala Leu Asn Ala Thr Glu Gly His Ala Ile Val
            420                 425                 430
Phe His Asp Ala Leu Val Phe Glu Asn Leu Lys Glu Arg Lys Ser Ala
        435                 440                 445
Glu Val Leu Leu Ile Asn Ser Arg Glu Asn Pro Gly Tyr Thr Gly Ser
    450                 455                 460
Ile Arg Phe Leu Glu Ala Glu Ser Lys Val Pro Gln Cys Ile His Val
465                 470                 475                 480
Gln Gln Gly Ser Leu Glu Leu Leu Asn Gly Ala Thr Leu Cys Ser Tyr
                485                 490                 495
Gly Phe Lys Gln Asp Ala Gly Ala Lys Leu Val Leu Ala Ala Gly Ser
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            500                 505                 510
Lys Leu Lys Ile Leu Asp Ser Gly Thr Pro Val Gln Gly His Ala Ile
        515                 520                 525
Ser Lys Pro Glu Ala Glu Ile Glu Ser Ser Ser Glu Pro Glu Gly Ala
    530                 535                 540
His Ser Leu Trp Ile Ala Lys Asn Ala Gln Thr Thr Val Pro Met Val
545                 550                 555                 560
Asp Ile His Thr Ile Ser Val Asp Leu Ala Ser Phe Ser Ser Ser Gln
                565                 570                 575
Gln Glu Gly Thr Val Glu Ala Pro Gln Val Ile Val Pro Gly Gly Ser
            580                 585                 590
Tyr Val Arg Ser Gly Glu Leu Asn Leu Glu Leu Val Asn Thr Thr Gly
        595                 600                 605
Thr Gly Tyr Glu Asn His Ala Leu Leu Lys Asn Glu Ala Lys Val Pro
    610                 615                 620
Leu Met Ser Phe Val Ala Ser Ser Asp Glu Ala Ser Ala Glu Ile Ser
625                 630                 635                 640
Asn Leu Ser Val Ser Asp Leu Gln Ile His Val Ala Thr Pro Glu Ile
                645                 650                 655
Glu Glu Asp Thr Tyr Gly His Met Gly Asp Trp Ser Glu Ala Lys Ile
            660                 665                 670
Gln Asp Gly Thr Leu Val Ile Asn Trp Asn Pro Thr Gly Tyr Arg Leu
        675                 680                 685
Asp Pro Gln Lys Ala Gly Ala Leu Val Phe Asn Ala Leu Trp Glu Glu
    690                 695                 700
Gly Ala Val Leu Ser Ala Leu Lys Asn Ala Arg Phe Ala Asp
705                 710                 715
<210>573
<211>594
<212>PRT
<213>Chlamydia trachomatis
<400>573
Phe Val Lys Lys Val Leu Phe Arg Arg Phe Glu Met Ser Ser Glu Lys
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Asp Ile Lys Ser Thr Cys Ser Lys Phe Ser Leu Ser Val Val Ala Ala
            20                  25                  30
Ile Leu Ala Ser Val Ser Gly Leu Ala Ser Cys Val Asp Leu His Ala
        35                  40                  45
Gly Gly Gln Ser Val Asn Glu Leu Val Tyr Val Gly Pro Gln Ala Val
    50                  55                  60
Leu Leu Leu Asp Gln Ile Arg Asp Leu Phe Val Gly Ser Lys Asp Ser
65                  70                  75                  80
Gln Ala Glu Gly Gln Tyr Arg Leu Ile Val Gly Asp Pro Ser Ser Phe
                85                  90                  95
Gln Glu Lys Asp Ala Asp Thr Leu Pro Gly Lys Val Glu Gln Ser Thr
            100                 105                 110
Leu Phe Ser Val Thr Asn Pro Val Val Phe Gln Gly Val Asp Gln Gln
        115                 120                 125
Asp Gln Val Ser Ser Gln Gly Leu Ile Cys Ser Phe Thr Ser Ser Asn
    130                 135                 140
Leu Asp Ser Pro Arg Asp Gly Glu Ser Phe Leu Gly Ile Ala Phe Val
145                 150                 155                 160
Gly Asp Ser Ser Lys Ala Gly Ile Thr Leu Thr Asp Val Lys Ala Ser
                165                 170                 175
Leu Ser Gly Ala Ala Leu Tyr Ser Thr Glu Asp Leu Ile Phe Glu Lys
            180                 185                 190
Ile Lys Gly Gly Leu Glu Phe Ala Ser Cys Ser Ser Leu Glu Gln Gly
        195                 200                 205
Gly Ala Cys Gly Ala Gln Ser Ile Leu Ile His Asp Cys Gln Gly Leu
    210                 215                 220
Gln Val Lys His Cys Thr Thr Ala Val Asn Ala Glu Gly Ser Ser Ala
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225                 230                 235                 240
Asn Asp His Leu Gly Phe Gly Gly Gly Ala Phe Phe Val Thr Gly Ser
                245                 250                 255
Leu Ser Gly Glu Lys Ser Leu Tyr Met Pro Ala Gly Asp Met Val Val
            260                 265                 270
Ala Asn Cys Asp Gly Ala Ile Ser Phe Glu Gly Asn Ser Ala Asn Phe
        275                 280                 285
Ala Asn Gly Gly Ala Ile Ala Ala Ser Gly Lys Val Leu Phe Val Ala
    290                 295                 300
Asn Asp Lys Lys Thr Ser Phe Ile Glu Asn Arg Ala Leu Ser Gly Gly
305                 310                 315                 320
Ala Ile Ala Ala Ser Ser Asp Ile Ala Phe Gln Asn Cys Ala Glu Leu
                325                 330                 335
Val Phe Lys Gly Asn Cys Ala Ile Gly Thr Glu Asp Lys Gly Ser Leu
            340                 345                 350
Gly Gly Gly Ala Ile Ser Ser Leu Gly Thr Val Leu Leu Gln Gly Asn
        355                 360                 365
His Gly Ile Thr Cys Asp Lys Asn Glu Ser Ala Ser Gln Gly Gly Ala
    370                 375                 380
Ile Phe Gly Lys Asn Cys Gln Ile Ser Asp Asn Glu Gly Pro Val Val
385                 390                 395                 400
Phe Arg Asp Ser Thr Ala Cys Leu Gly Gly Gly Ala Ile Ala Ala Gln
                405                 410                 415
Glu Ile Val Ser Ile Gln Asn Asn Gln Ala Gly Ile Ser Phe Glu Gly
            420                 425                 430
Gly Lys Ala Ser Phe Gly Gly Gly Ile Ala Cys Gly Ser Phe Ser Ser
        435                 440                 445
Ala Gly Gly Ala Ser Val Leu Gly Thr Ile Asp Ile Ser Lys Asn Leu
    450                 455                 460
Gly Ala Ile Ser Phe Ser Arg Thr Leu Cys Thr Thr Ser Asp Leu Gly
465                 470                 475                 480
Gln Met Glu Tyr Gln Gly Gly Gly Ala Leu Phe Gly Glu Asn Ile Ser
                485                 490                 495
Leu Ser Glu Asn Ala Gly Val Leu Thr Phe Lys Asp Asn Ile Val Lys
            500                 505                 510
Thr Phe Ala Ser Asn Gly Lys Ile Leu Gly Gly Gly Ala Ile Leu Ala
        515                 520                 525
Thr Gly Lys Val Glu Ile Thr Asn Asn Ser Val Glu Phe Leu Leu Gln
    530                 535                 540
Glu Met Arg Xaa Ser Thr Ser Ser Ser Asn Ser Arg Gly Val Ser Phe
545                 550                 555                 560
Ile Gln Gln Lys Arg Arg Ala Thr Thr Leu Phe Arg Ile Phe Trp Gly
                565                 570                 575
Arg Ser Asp Phe Arg Lys Arg Ser Ser Tyr Ser Pro Gln Arg Cys Ser
            580                 585                 590
Ser Ile
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<210>574
<211>321
<212>PRT
<213>Chlamydia trachomatis
<400>574

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             20                  25                  30
Glu Gln Pro Val Glu Phe Thr Val Phe Ala Thr Ser Asp Val His His
         35                  40                  45
Gln Leu Met Asn Ser Pro Leu Ser Arg Ser Val Arg Ile Val Thr Ala
     50                  55                  60
Glu Asp Phe Val Ser Met Glu Asp Ser Leu Leu Ala Ala Val Arg Lys
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 65                  70                  75                  80
Lys Arg Ser Ser Met Ala Leu Gly Leu Asp Ala Leu Gln Gln Gly Asp
                85                  90                  95
Leu Asp Gly Phe Val Ser Ser Gly Asn Thr Ala Ala Leu Val Thr Leu
            100                 105                 110
Ala Arg Ser Lys Ile Pro Met Ile Pro Ala Val Pro Arg Pro Ala Leu
        115                 120                 125
Leu Val Ser Val Pro Thr Leu Ser Gly Phe Ala Val Ile Leu Asp Val
    130                 135                 140
Gly Ala Thr Val Ser Val Asn Pro Asp Glu Met Val Gly Phe Ala Arg
145                 150                 155                 160
Met Gly Leu Ala Tyr Arg Gln Ser Leu Ser Ser Asn Ser Asn Gln Pro
                165                 170                 175
Phe Thr Leu Gly Leu Leu Asn Ile Gly Ser Glu Glu Arg Lys Gly Thr
            180                 185                 190
Asp Ser His Lys Gln Thr Phe Arg Met Leu Arg Asn Ile Phe Gly Ser
        195                 200                 205
Ala Phe Leu Gly Asn Ile Glu Ser Gly Asp Val Phe Ser Gly Lys Val
    210                 215                 220
Asp Ile Val Val Thr Asp Gly Phe Thr Gly Asn Val Phe Leu Lys Thr
225                 230                 235                 240
Ala Glu Gly Leu Phe Asp Phe Leu Arg His Ile Leu Gly Asp Arg Leu
                245                 250                 255
Glu Lys Ser Ile Lys Met Gln Phe Asp Tyr Thr Ile Tyr Pro Gly Ser
            260                 265                 270
Ile Ile Ser Gly Leu Ser Arg Leu Val Ile Lys Cys His Gly Lys Ser
        275                 280                 285
His Gly Thr Ala Leu Phe Gly Gly Ile Ser Gly Ala Ile Asp Leu Ala
    290                 295                 300
Arg Ala Asn Val Cys Ser Arg Ile Ala Asp Arg Phe Gly Asp Asn Val
305                 310                 315                 320
Val
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<210>575
<211>117
<212>PRT
<213>Chlamydia trachomatis
<400>575

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Ala Lys Pro Ile Arg Ala Lys Pro Thr Ile Ser Ser Gly Phe Thr Asp
  1               5                  10                  15
Thr Val Ala Pro Thr Ser Lys Ile Thr Ala Asn Pro Glu Arg Val Gly
             20                  25                  30
Thr Glu Thr Asn Asn Ala Gly Leu Gly Thr Ala Gly Ile Ile Gly Ile
         35                  40                  45
Leu Glu Arg Ala Ser Val Thr Lys Ala Ala Val Phe Pro Glu Glu Thr
     50                  55                  60
Lys Pro Ser Arg Ser Pro Cys Cys Asn Ala Ser Asn Pro Arg Ala Ile
 65                  70                  75                  80
Glu Asp Arg Phe Leu Arg Thr Ala Ala Asn Lys Glu Ser Ser Ile Glu
                85                  90                  95
Thr Lys Ser Ser Ala Val Thr Ile Arg Thr Glu Arg Asp Ser Gly Glu
            100                 105                 110
Phe Ile Asn Trp Trp
        115
```

<210>576
<211>525
<212>PRT
<213>Chlamydia trachomatis
<400>576

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Val Arg Thr Pro Val Glu Arg Arg Ala Phe Arg Asn Ala Met Glu Asn
  1               5                  10                  15
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Asp Ile Leu Leu Asn Ile Glu Ser Lys Glu Ile Arg Tyr Ala His Leu
                20                  25                  30
Lys Asn Gly Gln Leu Phe Asp Leu Ile Ile Glu Arg Lys Lys Ile Arg
            35                  40                  45
Gln Leu Lys Gly Asn Ile Tyr Arg Gly Arg Val Thr Asn Ile Leu Arg
        50                  55                  60
Asn Ile Gln Ser Ala Phe Ile Asn Ile Asp Glu Arg Glu Asn Gly Phe
65                  70                  75                  80
Ile His Ile Ser Asp Val Leu Glu Asn Ser Lys Lys Phe Glu Gln Met
                85                  90                  95
Phe Asp Ile Asp Ser Asp Ala Asp His Ala Glu Pro Arg Pro Glu Glu
            100                 105                 110
Thr Ser Glu Ala Pro Ile Glu Glu Leu Leu Lys Leu Asp Ser Pro Val
        115                 120                 125
Leu Val Gln Val Val Lys Glu Pro Ile Gly Thr Lys Gly Ala Arg Leu
    130                 135                 140
Thr Ser Asn Ile Ser Ile Pro Gly Arg Tyr Leu Val Leu Leu Pro Asn
145                 150                 155                 160
Ser Pro His Arg Gly Val Ser Arg Lys Ile Glu Asp Pro Leu Met Arg
                165                 170                 175
Asp Gln Leu Lys Gln Leu Ile Arg Ser Phe Glu Met Pro Gln Asn Met
            180                 185                 190
Gly Leu Ile Cys Arg Thr Ala Ser Ile Ser Ala Ser Thr Glu Thr Leu
        195                 200                 205
Ile Asn Glu Ala Gln Asp Leu Leu Asn Thr Trp Gln Ser Ile Leu Glu
    210                 215                 220
Lys Phe Tyr Ser Pro Asp His Pro Ser Leu Leu Tyr Glu Glu Thr Asp
225                 230                 235                 240
Ile Leu Lys Lys Ala Val Met Thr Cys Val Asp Lys Ser Tyr Lys Arg
                245                 250                 255
Leu Leu Ile Asp Asp Tyr Ala Thr Tyr Gln Lys Cys Lys Arg Leu Leu
            260                 265                 270
Gly Lys Tyr Ser Pro Asp Thr Thr Val Lys Ile Glu Tyr Tyr Arg Asp
        275                 280                 285
Ser Val Pro Met Phe Glu Arg Phe Asn Ile Glu Lys Glu Ile Asp Arg
    290                 295                 300
Ala Thr Lys Arg Lys Ile Trp Leu Ser Ser Gly Gly Tyr Leu Phe Phe
305                 310                 315                 320
Asp Lys Thr Glu Ala Met His Thr Ile Asp Val Asn Ser Gly Arg Ser
                325                 330                 335
Thr Gln Leu Glu Asn Gly Val Glu Glu Thr Leu Val Gln Ile Asn Leu
            340                 345                 350
Glu Ala Ala Glu Glu Ile Ala Arg Gln Leu Arg Leu Arg Asn Ile Gly
        355                 360                 365
Gly Leu Val Ile Ile Asp Phe Ile Asp Met Lys Ser Arg Lys Asn Gln
    370                 375                 380
Arg Arg Val Leu Glu Arg Leu Lys Glu His Met Lys Tyr Asp Ala Ala
385                 390                 395                 400
Arg Cys Thr Ile Leu Ser Met Ser Glu Phe Gly Leu Val Glu Met Thr
                405                 410                 415
Arg Gln Arg Asn Arg Glu Ser Leu Met Gln Thr Leu Phe Thr Thr Cys
            420                 425                 430
Pro Tyr Cys Asn Gly Asn Ala Ile Ile Lys Thr Ser Glu Ser Ile Leu
        435                 440                 445
Ile Glu Ile Glu Arg Asp Leu Lys Lys Ile Ile Lys His Lys Glu His
    450                 455                 460
Thr Asn Leu Cys Leu Val Val His Pro Glu Ile Ala His Tyr Met Lys
465                 470                 475                 480
Gln Glu Gln Asp Asp Val Glu Leu Ile Arg Leu Ala Lys Gln Leu Lys
                485                 490                 495
Ala Lys Leu Gln Ile Asn Thr Ser Asp Ser Ile His Leu Asn His Tyr
```

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```
            500                 505                 510
Gln Phe Phe Ser Leu Ile Thr Gly Glu Gly Ile Glu Leu
        515                 520                 525
<210>577
<211>296
<212>PRT
<213>Chlamydia trachomatis
<400>577
Lys Ile Ser Ala Glu Lys Ala Glu Ala Leu Cys Ser Gln Trp Leu Lys
  1               5                  10                  15
Val Ile Ile Asp Asp Leu Lys Asn Pro Ile Ile Phe Pro Pro Tyr His
            20                  25                  30
Lys Lys Ile Arg Ser Pro Ile Asp Leu Tyr Gln Phe Gly Ile Asp Phe
        35                  40                  45
Phe Ser Ala Leu Ile Asp His Gln Lys Ser Gln Ile Leu His Pro Glu
    50                  55                  60
Arg Leu Asp Gln Ile Gln Glu Tyr Ile Gln Ala Gly His Asn Val Val
65                  70                  75                  80
Leu Leu Ala Asn His Gln Thr Glu Ser Asp Pro Gln Leu Met Tyr Cys
                85                  90                  95
Leu Leu Gly Ala Ser His Pro Gln Leu Met Glu Ser Met Ile Phe Val
            100                 105                 110
Ala Gly Asp Arg Ile Thr Ser Asp Pro Leu Ala Arg Pro Phe Ser Met
        115                 120                 125
Gly Cys Asp Leu Leu Cys Ile Tyr Ser Lys Arg His Ile Asn His Pro
    130                 135                 140
Pro Glu Leu Lys Glu Glu Lys Leu Met His Asn Gln Lys Ser Met Arg
145                 150                 155                 160
Thr Leu Lys Met Leu Leu Ser Glu Gly Gly Lys Phe Phe Tyr Val Ala
                165                 170                 175
Pro Ser Gly Gly Arg Asp Arg Lys Asn Leu Gln Gly Glu Leu Tyr Pro
            180                 185                 190
Ala Glu Phe His Pro Asp Ser Val Glu Met Phe Arg Leu Leu Ala Lys
        195                 200                 205
Ser Ser Gly Lys Thr Thr His Phe Phe Pro Leu Ala Met Lys Thr Tyr
    210                 215                 220
Asp Ile Leu Pro Pro Pro Pro Thr Ile Glu Glu Ala Ile Gly Glu His
225                 230                 235                 240
Arg Val Ile Ser Phe Ala Pro Val Ala Phe Asn Phe Gly Asp Glu Leu
                245                 250                 255
Leu Leu Asp Glu Leu Cys Ser Ser Glu Glu Ala Asp Ile Tyr Asp Lys
            260                 265                 270
His Ala Leu Arg Ala Leu Arg Ala Ser Arg Ala Phe Ser Ile Val Thr
        275                 280                 285
Asp Leu Tyr Lys Glu Ile Leu Thr
    290                 295
<210>578
<211>793
<212>PRT
<213>Chlamydia trachomatis
<400>578
Met Asp Asn His Leu Pro Val Ile Asn Asp Pro Thr Asn Asp Pro Lys
  1               5                  10                  15
Asn Met Lys Arg Ser Leu Ser Leu Leu Leu Leu Cys Ile Pro Ser Phe
            20                  25                  30
Leu Thr Ala Cys Ser Lys Ser Phe Gln Thr Ile Arg Asp Glu Asn Pro
        35                  40                  45
Leu Thr Ile Leu Thr Pro Ala Leu Ala Asp Gln Lys Ile Ala Lys Ile
    50                  55                  60
Leu Cys Pro Asn Gly Leu Ser Leu Met Ile Val Ser Ser Pro His Ala
65                  70                  75                  80
```

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```
Ala Glu Ser Gly Ala Ala Leu Val Val Lys Thr Gly Asn Asn Ala Asp
                  85                  90                  95
Pro Val Glu Phe Pro Gly Leu Ala His Phe Thr Glu His Cys Val Phe
             100                 105                 110
Leu Gly Asn Glu Lys Tyr Pro Glu Pro Ser Gly Phe Pro Ala Phe Leu
         115                 120                 125
Ser Thr His Gly Gly Ile Tyr Asn Ala Phe Thr Tyr Pro Asp Lys Thr
     130                 135                 140
Cys Phe Leu Phe Ser Val Asn Asn Ala Asp Leu Asp Asn Ala Leu Asp
145                 150                 155                 160
Gln Phe Val His Leu Phe Ile Gln Pro Leu Phe Arg Gln Glu Asp Leu
                165                 170                 175
Asn Lys Glu Val His Ala Val Glu Gln Glu Phe Ala Met His Pro Thr
             180                 185                 190
Lys Asp Ser Arg Arg Met His Arg Ile Gln Gln Leu Ile Ala Pro Lys
         195                 200                 205
Asn His Pro Leu Lys Arg Phe Gly Cys Gly Asn Leu Ser Thr Leu Asn
     210                 215                 220
Ser Val Thr Thr Gln Asp Met Gln Thr Trp Phe Ala Thr His Tyr Ser
225                 230                 235                 240
Pro Glu Asn Met Ala Ala Ile Val Tyr Thr Thr Ala Pro Leu Asp Thr
                245                 250                 255
Ala Val Pro Tyr Ile Ala Ser Leu Phe Ser Glu Ile Pro Ile Ser Ala
             260                 265                 270
Gln Tyr Thr Pro Gln Lys Pro Phe Pro Lys Thr Gln Asp Thr Thr Ala
         275                 280                 285
Leu Asn Lys Leu Phe Ile Asn Lys Ala Val Glu Pro Ser Pro Gln Leu
     290                 295                 300
Ala Ile Tyr Trp His Phe Tyr Asp Ala Pro Gln Ser Leu Gln Gly Trp
305                 310                 315                 320
Ala Gln Ser Leu Ile Ser Ile Leu Ser Ser Glu Lys Glu Asn Ser Leu
                325                 330                 335
Val Ala Leu Leu Lys Lys Glu Gln Leu Ile Thr Glu Met Glu Ala Glu
             340                 345                 350
Leu Tyr Ser Thr Ser His Asn Thr Gln Asp Phe Glu Ile Leu Tyr Lys
         355                 360                 365
Leu Thr Asn Lys Gly Glu Arg Glu Tyr Gln Arg Val Leu Gln Leu Thr
     370                 375                 380
Phe Ala Phe Leu Asp Tyr Val Arg His Glu Arg Leu Pro Ala Tyr Ser
385                 390                 395                 400
Leu Pro Glu Ile Gln Lys Ile Asn Ser Leu Glu Tyr Thr Tyr Ser Thr
                405                 410                 415
Gln Thr Glu Leu Phe Ser Thr Leu Ser Arg Met Val Pro Asn Phe Thr
             420                 425                 430
Ser Glu Pro Leu Ala Thr Tyr Pro Tyr Arg Ser Leu Val Tyr Pro Glu
         435                 440                 445
Tyr Ser Gln Glu Asp Glu Gln Thr Phe Ala Thr Phe Leu Ala Asp Pro
     450                 455                 460
Gln Gln Ala Arg Tyr Ile Leu Ser Ala Thr Leu Pro Ser Ser Trp Glu
465                 470                 475                 480
Asn Ala Asp Glu Phe Tyr Asp Pro Ile Phe Asp Asp Thr Phe Tyr Glu
                485                 490                 495
Lys Pro Leu Asp Phe Thr Pro Ile Gln Asp Ser Ser Ser Leu Gly Phe
             500                 505                 510
Ala Phe Pro Asn Pro Asn Lys Phe Ile Pro Gln Thr Val Gln Leu Leu
         515                 520                 525
Ser Gln Lys Lys Gln His Glu Gly Phe Ala Phe Ser Pro Gln Leu Thr
     530                 535                 540
Tyr Asp Gln Asn Ala Ile Thr Leu Tyr Thr Cys Glu Asp Ser Phe Tyr
545                 550                 555                 560
Thr Ile Pro Lys Ile Ala Met Glu Leu Arg Ile Arg Ser Pro Gln Ile
```

Substitute Sheet (Rule 26)

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565 570 575
Gln Arg Thr Asp Val Arg Ser Leu Val Leu Arg Asp Leu Tyr Ser Leu
580 585 590
Leu Ala Asn Glu Thr Leu Ile Lys Arg Tyr Asp Asp Ala Leu Lys Ala
595 600 605
Gly Met Thr Phe Ala Val Ser Pro Gly Ala Thr Gly Val Asp Leu Ser
610 615 620
Leu Leu Gly Tyr Thr Glu Thr Ser Pro Val Leu Ile Asn Ala Leu Leu
625 630 635 640
Ser Ser Leu Arg Asp Leu Pro Val Glu Glu Ser Leu Phe Leu Tyr Tyr
645 650 655
Lys Asp Gln Leu Ser Glu Gln Tyr Gln Lys Asn Leu Ile Ala Cys Pro
660 665 670
Ile Arg Ala Gly Leu Asn Lys Leu Tyr Ser Gln Ile Leu Val Asp Thr
675 680 685
Val Ser Leu Glu Xaa Lys Leu Asn Thr Leu Asn Thr Leu Ser Tyr Glu
690 695 700
Glu Phe Ala Asn Phe Thr Asn Lys Leu Leu Gln Glu Leu Ala Val Glu
705 710 715 720
Ser Leu Ala Leu Gly Thr Leu Ser Ala Gln Asp Leu Ser Asn Leu Leu
725 730 735
Ser Thr Leu Ser Asn Phe Ala Glu Ala Ser Ser Pro Tyr Ala Ala Pro
740 745 750
Ser Tyr Leu Ser Ser Lys Lys Thr Ser Leu Phe Tyr Lys Ala Phe Val
755 760 765
Pro Ile Ser Ser Leu Trp Lys Leu Val Cys Cys Cys Ser Asn Lys Thr
770 775 780
Lys Ile Pro Ile Asn Ile Arg Thr Leu
785 790

<210>579
<211>251
<212>PRT
<213>Chlamydia trachomatis
<400>579
Thr Gly Leu Arg Ser Leu Gly Asp Ser Ala Ile Leu Ser Ile Phe Ile
1 5 10 15
Tyr Arg Ser Tyr Arg Ile Thr Met Ala Tyr Phe Asp Ser Arg Asn Tyr
20 25 30
Val Phe Ser Leu Phe Ile Ile Ala Met Leu Ile Leu Leu Glu Ser Arg
35 40 45
Pro Ile Glu Tyr Phe Ser Gln Arg Val Phe Ala Thr Ile Ala Lys Ile
50 55 60
Gly Lys Gln Ser Pro Ile Cys Trp Trp Trp Thr Ile Met Ile Ala Ala
65 70 75 80
Pro Leu Ser Ala Phe Phe Leu Lys Glu Ser Gly Ala Met Ile Ile Ala
85 90 95
Ala Thr Leu Leu Ser Lys Gln Phe Tyr Lys Phe Ser Pro Ser Pro Lys
100 105 110
Phe Cys Tyr Ala Thr Met Gly Leu Leu Phe Ser Asn Ile Ser Ile Ser
115 120 125
Gly Leu Thr Ser Ser Phe Ser Ser Arg Ala Leu Leu Thr Ile Leu Pro
130 135 140
Glu Ile Lys Trp Thr Asn Ser Phe Ile Ile Ser His Phe Cys Trp Lys
145 150 155 160
Val Ile Leu Ala Ile Leu Val Ser Thr Thr Ile Leu Phe Cys Leu Phe
165 170 175
Arg Lys Glu Phe Lys Lys Phe Pro Lys Thr Ile Pro Ser Thr Thr Met
180 185 190
Met Asn Asp Arg Leu Pro Ser Trp Ile Ile Phe Ile His Val Val Leu
195 200 205
Val Gly Cys Val Ile Leu Ser Arg Ala Ile Pro Leu Phe Leu Gly Phe

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```
    210                 215                 220
Leu Phe Ile Phe Tyr Leu Gly Phe Gln Arg Phe Thr Ile Phe Tyr Gln
225                 230                 235                 240
His Pro Ile Gln Asn Ser Lys Ser Ser Val Ser
                245                 250
<210>580
<211>79
<212>PRT
<213>Chlamydia trachomatis
<400>580
Gly Tyr Asn Ser Ala Gly Phe Ile Arg Ser Trp Asn Met Gln His Thr
  1               5                  10                  15
Ile Met Leu Ser Leu Glu Asn Asp Asn Asp Lys Leu Ala Ser Met Met
             20                  25                  30
Asp Arg Val Val Ala Ala Ser Ser Ser Ile Leu Ser Ala Ser Lys Asp
         35                  40                  45
Ser Glu Ser Asn Arg Gln Phe Thr Ile Ser Lys Ala Pro Asp Lys Glu
     50                  55                  60
Ala Pro Cys Arg Val Ser Tyr Val Ala Ala Ser Ala Leu Ser Glu
 65                  70                  75
<210>581
<211>263
<212>PRT
<213>Chlamydia trachomatis
<400>581
Asn Ser His Thr Leu Ser Ser Asp Thr Phe Gly Asp Gln Leu Ser Leu
  1               5                  10                  15
Ser Ile Ser Ser Arg Asp Ser Leu Gln Val Ile Asn Ala Cys His Leu
             20                  25                  30
Glu Thr Pro Ser Asn Ser Ile Trp Lys Ser Val Ala Leu Phe Arg Arg
         35                  40                  45
Tyr Thr Gly Ile Thr Thr Pro Val Ser Trp Arg Val Val Lys Gln Ile
     50                  55                  60
Pro Val Gly Ala Gly Leu Ala Gly Gly Ser Ser Asn Ala Ala Thr Ala
 65                  70                  75                  80
Leu Phe Ala Leu Asn Gln Ile Phe Lys Thr Gly Leu Ser Asp Glu Glu
                85                  90                  95
Met Arg Ser Leu Ala Glu Gln Ile Gly Met Asp Thr Pro Phe Phe Phe
            100                 105                 110
Ser Thr Gly Ala Ala Leu Gly Val Ala Arg Gly Glu Lys Ile Ile Ala
        115                 120                 125
Leu Glu Glu Ser Val Ser Asp Arg Tyr Val Leu Tyr Phe Ser Ser Glu
    130                 135                 140
Gly Val Leu Thr Ser Arg Ala Phe Ala Val Val Gln Pro Ser Asp Cys
145                 150                 155                 160
Ser Ser Arg Lys Asn Leu Glu Tyr Thr Gln Asn Asp Leu Glu Lys Pro
                165                 170                 175
Val Phe Arg Leu Arg Leu Asp Leu Lys Glu Lys Lys His Trp Leu Glu
            180                 185                 190
Ser Leu Trp Ala Glu Leu Pro Val His Ile Gly Leu Thr Gly Ser Gly
        195                 200                 205
Ala Thr Leu Phe Val Arg Tyr Pro Glu Ile Leu Glu Glu Asp Pro Ser
    210                 215                 220
Tyr Ala Ala Gln Ile Gln Arg Ala Val Thr Leu Ser Gly Gly Leu Leu
225                 230                 235                 240
Thr Ser Pro Ile Arg Arg Asp Pro Thr Ala Trp Tyr Ser Ile Tyr Ser
                245                 250                 255
Glu Ser Ala Leu Ala Ala Thr
            260
<210>582
<211>183
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<212>PRT
<213>Chlamydia trachomatis
<400>582
Arg Thr Asn Lys Val Ala Pro Asp Pro Val Ser Pro Ile Cys Thr Gly
1 5 10 15
Ser Ser Ala His Arg Leu Ser Ser Gln Cys Phe Phe Ser Phe Lys Ser
20 25 30
Lys Arg Asn Arg Lys Thr Gly Phe Ser Lys Ser Phe Cys Val Tyr Ser
35 40 45
Lys Phe Phe Leu Glu Glu Gln Ser Glu Gly Cys Thr Thr Ala Lys Ala
50 55 60
Arg Leu Val Arg Thr Pro Ser Leu Glu Lys Tyr Lys Thr Tyr Leu Ser
65 70 75 80
Glu Thr Leu Ser Ser Arg Ala Ile Ile Phe Ser Pro Arg Ala Thr Pro
85 90 95
Lys Ala Ala Pro Val Glu Lys Lys Lys Gly Val Ser Met Pro Ile Cys
100 105 110
Ser Ala Lys Glu Arg Ile Ser Ser Ser Asp Ser Pro Val Leu Lys Ile
115 120 125
Trp Phe Lys Ala Asn Asn Ala Val Ala Ala Leu Leu Leu Pro Pro Ala
130 135 140
Arg Pro Ala Pro Thr Gly Ile Cys Leu Thr Thr Arg Gln Leu Thr Gly
145 150 155 160
Val Val Met Pro Val Tyr Arg Arg Lys Ser Ala Thr Leu Phe His Ile
165 170 175
Glu Leu Leu Gly Val Ser Arg
180
<210>583
<211>167
<212>PRT
<213>Chlamydia trachomatis
<400>583
Met Lys Pro Gln Leu Leu Leu Leu Glu Asp Val Asp Gly Leu Gly Arg
1 5 10 15
Ser Gly Asp Leu Val Val Ala Lys Pro Gly Tyr Val Arg Asn Tyr Leu
20 25 30
Leu Pro Lys Gly Lys Ala Val Val Ser Ser Ala Gly Thr Leu Arg Leu
35 40 45
Gln Ala Lys Leu Gln Glu Gln Arg Leu Leu Gln Ala Ala Ala Asp Lys
50 55 60
Glu Glu Ser Leu Arg Leu Ala Glu Met Leu Arg Ser Ile Val Leu Asp
65 70 75 80
Phe Gln Val Arg Val Asp Ser Glu Asn Asn Met Tyr Gly Ser Val Thr
85 90 95
Val Asn Asp Met Ile Ser Ala Ala Glu Gln Gln Gly Val Val Leu Thr
100 105 110
Arg Lys Asn Phe Pro Arg Ser His Ser Gly Ile Lys Asn Leu Gly Arg
115 120 125
His Val Val Gly Leu Lys Leu Lys Glu Gly Val Thr Ala Asp Leu His
130 135 140
Leu Glu Val Arg Ala Asp His Glu Ile Ile Glu Gln Lys Glu Leu Gln
145 150 155 160
Ser Ala Glu Glu Gln Glu Gly
165
<210>584
<211>81
<212>PRT
<213>Chlamydia trachomatis
<400>584
Met Asn Arg Pro Val His Asn Glu His Arg Arg Lys Arg Phe Ala Lys
1 5 10 15

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```
Lys Cys Pro Phe Val Ser Ala Gly Trp Lys Thr Ile Asp Tyr Lys Asp
            20                  25                  30
Val Thr Thr Leu Lys Arg Phe Ile Thr Glu Arg Gly Lys Ile Leu Pro
        35                  40                  45
Arg Arg Ile Thr Gly Val Ser Ser Arg Phe Gln Ala Leu Leu Ala Gln
    50                  55                  60
Ala Val Lys Arg Ala Arg His Val Gly Leu Leu Pro Phe Val Gly Glu
65                  70                  75                  80
Asp
```

<210>585
<211>112
<212>PRT
<213>Chlamydia trachomatis
<400>585

```
Met Gln Lys Lys Thr Gly Gln Leu Tyr Glu Gly Ala Tyr Val Phe Ser
  1               5                  10                  15
Val Thr Leu Ser Glu Asp Ala Arg Arg Lys Ala Leu Glu Lys Val Thr
            20                  25                  30
Ser Gly Ile Thr Asn Tyr Gly Gly Glu Val Leu Lys Ile His Asp Gln
        35                  40                  45
Gly Arg Lys Lys Leu Ala Tyr Thr Ile Arg Gly Ala Arg Glu Gly Tyr
    50                  55                  60
Tyr Tyr Phe Ile Tyr Phe Thr Val Ala Pro Glu Ala Ile Ala Glu Leu
65                  70                  75                  80
Trp Arg Glu Tyr His Leu Asn Glu Asp Leu Leu Arg Phe Met Thr Leu
                85                  90                  95
Lys Ala Ser Ala Val Lys Glu Val Leu Glu Phe Ala Thr Leu Pro Glu
            100                 105                 110
```

<210>586
<211>107
<212>PRT
<213>Chlamydia trachomatis
<400>586

```
Ser Cys Leu Ser Cys Gln Glu Val Phe Arg Cys Phe His Gly Arg Tyr
  1               5                  10                  15
Ser Cys Cys Ser Arg Arg His His Arg Glu Phe Gly Phe Val Arg Phe
            20                  25                  30
Arg Gln Asp Cys Gly Ser Gly Gly His Asn Gly Ile Lys Asn Thr Thr
        35                  40                  45
Gln Ile Leu Gln Ser Asn His Tyr Trp Gln Leu Arg Leu Gly Val Gly
    50                  55                  60
Arg Pro Ser Tyr Pro Gly Ala Glu Gly Val Ala Asp Tyr Val Leu Ser
65                  70                  75                  80
Ser Phe Ser Leu Asn Glu Lys Glu Lys Leu Asn Asp Phe Leu Glu Lys
                85                  90                  95
Gly Ile Glu Glu Ile Leu Pro Trp Leu Gly Cys
            100                 105
```

<210>587
<211>134
<212>PRT
<213>Chlamydia trachomatis
<400>587

```
Met Val Lys Leu Val Val Gly Ile Gly Asn Pro Gly Arg Gln Tyr Val
  1               5                  10                  15
Trp Thr Arg His Asn Ile Gly Phe Leu Leu Leu Asp Ser Leu Ala Ser
            20                  25                  30
Arg Phe Leu Gly Ala Phe Arg Glu Ala Pro Arg Leu Tyr Ala Ser Phe
        35                  40                  45
Ala Lys Val Glu Ile Ser Ser Glu Ala Val Val Leu Met Lys Pro Thr
    50                  55                  60
```

Thr Tyr Val Asn Leu Thr Gly Lys Ala Val Leu Ala Ala Lys Lys Phe
65 70 75 80
Phe Asp Val Ser Met Glu Asp Ile Leu Val Val Ala Asp Asp Ile Ile
85 90 95
Gly Asn Ser Val Leu Cys Val Phe Gly Lys Ile Val Ala Leu Val Gly
100 105 110
Thr Met Glu Leu Arg Ile Pro Arg Arg Phe Cys Asn Pro Ile Ile Ile
115 120 125
Gly Asn Tyr Val Leu Gly
130

<210>588
<211>127
<212>PRT
<213>Chlamydia trachomatis
<400>588
Leu Leu Leu Cys Ser Arg Phe Leu Asn Glu Gly Arg Glu Ile Lys Ala
1 5 10 15
Leu Val Lys Asp Ile Gln Tyr His Val Thr Thr Tyr Asp Val Ile His
20 25 30
Leu Asp Phe Glu Glu Leu Val Asp Gly Arg Asp Val Arg Leu Asn Val
35 40 45
Pro Ile Arg Cys Ile Asn Thr Val Asp Cys Val Gly Val Lys Leu Gly
50 55 60
Gly Ser Leu Arg Gln Val Ile Arg Cys Ile Arg Val Val Cys Lys Pro
65 70 75 80
Lys Asp Ile Val Pro Phe Leu Glu Leu Asp Val Gln Ser Leu Gly Leu
85 90 95
Ser Gln Thr Leu Lys Leu Ser Asp Ile Cys Ile Pro Glu Gly Ile Arg
100 105 110
Pro Val Thr Ser Leu Lys Glu Val Ala Val Thr Val Ala Arg Arg
115 120 125

<210>589
<211>493
<212>PRT
<213>Chlamydia trachomatis
<400>589
Leu Leu Lys Glu Ile Ile Asn Glu Phe Tyr Leu Ile Asn Glu Thr Lys
1 5 10 15
Ser Leu Leu Met Lys Ile Ile His Thr Ala Ile Glu Phe Ala Pro Val
20 25 30
Ile Lys Ala Gly Gly Leu Gly Asp Ala Leu Tyr Gly Leu Ala Lys Ala
35 40 45
Leu Ala Ala Asn His Thr Thr Glu Val Val Ile Pro Leu Tyr Pro Lys
50 55 60
Leu Phe Thr Leu Pro Lys Glu Gln Asp Leu Cys Ser Ile Gln Lys Leu
65 70 75 80
Ser Tyr Phe Phe Ala Gly Glu Gln Glu Ala Thr Ala Phe Ser Tyr Phe
85 90 95
Tyr Glu Gly Ile Lys Val Thr Leu Phe Lys Leu Asp Thr Gln Pro Glu
100 105 110
Leu Phe Glu Asn Ala Glu Thr Ile Tyr Thr Ser Asp Asp Ala Phe Arg
115 120 125
Phe Cys Ala Phe Ser Ala Ala Ala Ala Ser Tyr Ile Gln Lys Glu Gly
130 135 140
Ala Asn Ile Val His Leu His Asp Trp His Thr Gly Leu Val Ala Gly
145 150 155 160
Leu Leu Lys Gln Gln Pro Cys Ser Gln Leu Gln Lys Ile Val Leu Thr
165 170 175
Leu His Asn Phe Gly Tyr Arg Gly Tyr Thr Thr Arg Glu Ile Leu Glu
180 185 190
Ala Ser Ser Leu Asn Glu Phe Tyr Ile Ser Gln Tyr Gln Leu Phe Arg

```
        195                 200                 205
Asp Pro Gln Thr Cys Val Leu Leu Lys Gly Ala Leu Tyr Cys Ser Asp
    210                 215                 220
Phe Val Thr Thr Val Ser Pro Thr Tyr Ala Lys Glu Ile Leu Glu Asp
225                 230                 235                 240
Tyr Ser Asp Tyr Glu Ile His Asp Ala Ile Thr Ala Arg Gln His His
                245                 250                 255
Leu Arg Gly Ile Leu Asn Gly Ile Asp Thr Thr Ile Trp Gly Pro Glu
            260                 265                 270
Thr Asp Pro Asn Leu Ala Lys Asn Tyr Thr Lys Glu Leu Phe Glu Thr
        275                 280                 285
Pro Ser Ile Phe Phe Glu Ala Lys Ala Glu Asn Lys Lys Ala Leu Tyr
    290                 295                 300
Glu Arg Leu Gly Leu Ser Leu Glu His Ser Pro Cys Val Cys Ile Ile
305                 310                 315                 320
Ser Arg Ile Ala Glu Gln Lys Gly Pro His Phe Met Lys Gln Ala Ile
                325                 330                 335
Leu His Ala Leu Glu Asn Ala Tyr Thr Leu Ile Ile Ile Gly Thr Cys
            340                 345                 350
Tyr Gly Asn Gln Leu His Glu Glu Phe Ala Asn Leu Gln Glu Ser Leu
        355                 360                 365
Ala Asn Ser Pro Asn Val Arg Ile Leu Leu Thr Tyr Ser Asp Val Leu
    370                 375                 380
Ala Arg Gln Ile Phe Ala Ala Ala Asp Met Ile Cys Ile Pro Ser Met
385                 390                 395                 400
Phe Glu Pro Cys Gly Leu Thr Gln Met Ile Gly Met Arg Tyr Gly Thr
                405                 410                 415
Val Pro Leu Val Arg Ala Thr Gly Gly Leu Ala Asp Thr Val Ala Asn
            420                 425                 430
Gly Ile Asn Gly Phe Ser Phe Phe Asn Pro His Asp Phe Tyr Glu Phe
        435                 440                 445
Arg Asn Met Leu Leu Glu Ala Val Thr Thr Tyr Arg Thr Asn His Asp
    450                 455                 460
Lys Trp Gln His Ile Val Arg Ala Cys Leu Asn Phe Ser Ser Asp Leu
465                 470                 475                 480
Glu Thr Ala Ala Asn Lys Tyr Leu Glu Ile Tyr Lys Gln
                485                 490
```

<210>590
<211>219
<212>PRT
<213>Chlamydia trachomatis
<400>590

```
Leu Gly Ile Gln Lys Arg Phe Leu Gly Glu Gln Met Arg Val Ser Leu
  1               5                  10                  15
Pro Asn Phe Leu Thr Val Phe Arg Leu Phe Ile Thr Pro Ile Phe Met
             20                  25                  30
Ile Leu Tyr Leu Lys Gly Arg Trp Phe Gly Leu Ser Ala Ala Phe Leu
         35                  40                  45
Pro Tyr Val Leu Leu Phe Leu Leu Ile Ile Thr Glu Ile Thr Asp Ala
     50                  55                  60
Val Asp Gly Tyr Ile Ala Arg Lys Phe Ser Gln Val Thr Asp Leu Gly
 65                  70                  75                  80
Lys Leu Leu Asp Pro Met Ala Asp Ser Val Tyr Arg Ile Ser Leu Tyr
                 85                  90                  95
Leu Thr Phe Thr Gln Pro Pro Val Asn Leu Pro Leu Ile Leu Val Phe
            100                 105                 110
Ile Phe Leu Ala Arg Asp Ser Val Ile Ser Thr Leu Arg Thr Leu Cys
        115                 120                 125
Ala Ser Arg Gly Gln Val Leu Ala Ala Arg Met Ser Gly Lys Leu Lys
    130                 135                 140
Ala Ile Leu Gln Ala Ile Ser Phe Phe Phe Ile Ile Phe Ser Met Phe
```

145 150 155 160
Leu Cys Ala Lys Gly Ile Ile Ser Thr Asp Asp Leu Glu Phe Phe Ser
165 170 175
Thr Val Ile Val Ser Leu Val Ala Phe Tyr Ser Ile Cys Ser Gly Val
180 185 190
Glu Tyr Ile Trp Val Asn Lys Ser His Leu Leu Gln Lys Asn Asp Ser
195 200 205
Arg Met Ala Ser His Arg Glu Val Tyr Cys Leu
210 215

<210>591
<211>1031
<212>PRT
<213>Chlamydia trachomatis
<400>591

Leu Phe Cys Arg Ala Arg Leu Leu Phe Gln Ala Val Phe Arg Val Arg
1 5 10 15
Lys Ala Leu Leu Phe Leu Arg Tyr Leu Gly Val Phe Met Ser Ser Gln
20 25 30
Pro Leu Thr Leu Gln Ala Met Met Ala Ala Ile Leu Asn Phe Trp Ser
35 40 45
Glu Gln Gly Cys Ile Ile His Gln Gly Tyr Asp Leu Glu Val Gly Ala
50 55 60
Gly Thr Phe Asn Pro Ala Thr Phe Leu Gln Ser Leu Gly Pro Glu Pro
65 70 75 80
Phe Arg Thr Ala Tyr Ile Glu Pro Ser Arg Arg Pro Gln Asp Gly Arg
85 90 95
Tyr Gly Gln His Pro Asn Arg Leu Gln Lys Tyr His Gln Leu Gln Val
100 105 110
Ile Leu Lys Pro Val Pro Glu Asn Phe Leu Ser Leu Tyr Leu Glu Ser
115 120 125
Leu Lys Val Ile Gly Leu Asn Leu Val Asp His Asp Ile Arg Phe Val
130 135 140
His Asp Asp Trp Glu Asn Pro Thr Ile Gly Ala Trp Gly Leu Gly Trp
145 150 155 160
Glu Val Trp Leu Asn Gly Met Glu Ile Thr Gln Leu Thr Tyr Phe Gln
165 170 175
Ala Val Gly Ser Lys Pro Leu Asp Ala Ile Ser Gly Glu Ile Thr Tyr
180 185 190
Gly Val Glu Arg Ile Ala Met Tyr Leu Gln Lys Lys Asn Ser Val Tyr
195 200 205
Asp Val Met Trp Asn Gly Ser Leu Thr Tyr Gly Asp Ile Thr Gln Tyr
210 215 220
Ala Glu Gln Ala Trp Ser Gln Tyr Asn Phe Glu Thr Ala Asn Thr Thr
225 230 235 240
Met Trp Leu Lys His Phe Asp Asp Phe Ser Ala Glu Ala Leu Ala Thr
245 250 255
Leu Asp Gln Gly Leu Pro Leu Pro Ala Tyr Asp Phe Val Ile Lys Ala
260 265 270
Ser His Ala Phe Asn Met Leu Asp Ser Arg Gly Val Ile Ser Val Thr
275 280 285
Glu Arg Thr Arg Tyr Ile Ala Lys Ile Arg Gln Leu Ala Arg Ala Ala
290 295 300
Ala Asp Lys Tyr Val Ala Trp Arg Glu Ser Leu Gly Phe Pro Leu Leu
305 310 315 320
Lys Thr Pro Pro Ser Thr Pro Thr Val Thr Pro Lys Lys Ile Pro Thr
325 330 335
Ile Cys Gln Pro Glu Asp Phe Leu Leu Glu Ile Gly Ser Glu Glu Leu
340 345 350
Pro Ala Thr Phe Val Pro Thr Gly Ile Gln Gln Leu Glu Ser Leu Ala
355 360 365
Lys Lys Leu Leu Ala Asp His Gly Ile Ala Tyr Lys His Leu Glu Val

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    370                 375                 380
Leu Gly Thr Pro Arg Arg Leu Ala Leu Cys Ile Glu Gly Leu Ser His
385                 390                 395                 400
Val Thr Ile Arg Pro Glu Ser Glu Lys Lys Gly Pro Pro Leu Ser Leu
                405                 410                 415
Leu Phe Met Thr Asp Gly Ser Val Ser Pro Gln Gly Glu Gln Phe Phe
            420                 425                 430
Pro Ser His Gly Leu Ser Ile Ser His Arg Ser Ala Leu Asp Gln Pro
        435                 440                 445
Ser Ala Ile Cys Arg Val Arg Ser Ile Asn Gly Thr Asp Tyr Leu Phe
    450                 455                 460
Leu Val Ile Pro Glu Glu Arg Lys Glu Thr Ala Ala Ile Leu Val Asn
465                 470                 475                 480
Glu Leu Pro Gln Leu Ile Arg Ser Ile Arg Phe Pro Gln Lys Met Thr
                485                 490                 495
Trp Asp Asn Gly Gly Val Glu Tyr Ala Arg Pro Ile Arg Trp Leu Val
            500                 505                 510
Ala Leu Tyr Gly Asp Gln Ile Leu Pro Ile Ser Leu Gly Phe Val Ser
        515                 520                 525
Ser Gly Asn Thr Ser Trp Gly His Arg Gln Leu Asp Asn Arg Gln Leu
    530                 535                 540
Thr Ile Pro Ser Ser Asn Met Tyr Val Asp Thr Leu Arg Ser Ala Cys
545                 550                 555                 560
Val Ile Val Ser Gln Lys Glu Arg Arg Ala Ile Ile Lys Gln Gly Leu
                565                 570                 575
Gln Asn Leu Thr Gly Asp Gln Ile Val Ala Ile Ala Pro Glu His Leu
            580                 585                 590
Val Asp Glu Thr Val Phe Leu Thr Glu His Pro Phe Val Ile Ser Ala
        595                 600                 605
Gln Phe Asp Pro Ala Phe Cys Ser Leu Pro Lys Glu Leu Leu Ile Ala
    610                 615                 620
Glu Met Ile Gln His Gln Arg Tyr Phe Pro Thr Gln Asn Met Gln Gly
625                 630                 635                 640
Glu Ile Thr Asn Arg Phe Leu Ile Val Cys Asp Asn Ser Pro Thr Asp
                645                 650                 655
Ser Ile Val Glu Gly Asn Glu Lys Ala Leu Ala Pro Arg Leu Thr Asp
            660                 665                 670
Gly Asn Phe Leu Phe Lys Gln Asp Leu Leu Thr Pro Leu Ser Ser Phe
        675                 680                 685
Val Glu Lys Leu Lys Ser Val Thr Tyr Phe Glu Ser Leu Gly Ser Leu
    690                 695                 700
Ala Asp Lys Thr Ser Arg Leu Lys Leu His Leu Glu Glu Ala Tyr Ala
705                 710                 715                 720
Leu Leu Pro Leu Cys Ala Lys Glu Asp Ile Asp Thr Ala Ile His Tyr
                725                 730                 735
Cys Lys Ala Asp Leu Val Ser Ser Val Val Asn Glu Phe Pro Glu Leu
            740                 745                 750
Gln Gly Ile Met Gly Arg Tyr Tyr Leu Gln Asn Ala Ser Leu Ser Arg
        755                 760                 765
Ala Ala Ala Leu Ala Ile Gly Glu His Leu Gln His Ile Thr Leu Gly
    770                 775                 780
Ser Asn Ile Ser Thr Thr Gly Ala Leu Leu Ser Ile Leu Asp Arg Ile
785                 790                 795                 800
Asp Asn Leu Leu Ser Cys Phe Ile Leu Gly Leu Leu Pro Thr Ser Ser
                805                 810                 815
His Asp Pro Tyr Ala Leu Arg Arg Gln Ser Leu Glu Ile Leu Thr Leu
            820                 825                 830
Leu Tyr Thr Thr Gln Ser Ser Val Asp Ile Glu Asp Leu Phe Ala Arg
        835                 840                 845
Leu Ile Arg His Phe Pro Ser Ser Ile Pro Asn Thr Val Trp Ser Pro
    850                 855                 860
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Glu Glu Val Leu Ser Lys Leu Asn Thr Phe Val Trp Gly Arg Leu Arg
865                 870                 875                 880
Thr Ile Leu Ser Ser Leu Gly Phe Asp Lys Glu Ile Ile Ala Thr Val
                885                 890                 895
Leu Thr Asp Asn Cys Pro Lys Asn Pro Leu Thr Ile Ile Gln Ser Ala
            900                 905                 910
Gln Ser Ile Gln Glu Leu Lys Asn Thr Gln Ile Leu Lys Thr Ile Ala
        915                 920                 925
Ala Thr His Asn Arg Leu Lys Lys Ile Leu Ala Ser Leu Ser Phe Ser
    930                 935                 940
Val Thr Glu Gln Met Phe Ser Leu Gln Ser Ala Glu Asp Leu Leu Phe
945                 950                 955                 960
Lys Gln Ala Leu Asp Arg Phe Val Glu Glu Thr Thr Ala Leu Pro Ile
                965                 970                 975
Ser Ser Lys Asp Tyr Leu His Leu Leu Lys Glu Leu Ala Gln Ser Thr
            980                 985                 990
Glu Leu Phe Leu Asp Ser Val Arg Val Ala Ser Asp Asp Glu Ser Thr
        995                 1000                1005
Arg Asn Gln Arg Ile Ala Leu Leu Ile Ala Ala Gln Lys Cys Phe Gly
    1010                1015                1020
Phe Tyr Ala Trp Asp Val Leu
1025                1030
<210>592
<211>164
<212>PRT
<213>Chlamydia trachomatis
<400>592
Lys Arg Ser Ser Leu Met Arg Phe Leu Leu Ala Leu Phe Ser Leu Ile
  1               5                  10                  15
Leu Val Leu Pro Ala Thr Glu Ala Phe Ser Thr Glu Asp Lys Gln Cys
            20                  25                  30
Gln Gln Glu Ala Glu Glu Asp Cys Ser Gln Val Ala Asp Thr Cys Val
        35                  40                  45
Phe Tyr Ser Tyr Ala Glu Gly Leu Glu His Ala Arg Asp Glu Gly Lys
    50                  55                  60
Leu Thr Leu Val Val Leu Leu Asp Thr Ser Gly Tyr Ser Phe Glu Thr
65                  70                  75                  80
Leu Ala Tyr Ala Ala His Ala Met Glu Ser Ser Leu Leu Ser Thr Phe
                85                  90                  95
Ala Asp Phe Val Val Leu Ser Arg Arg Glu Ala Val Pro Leu Ile Ile
            100                 105                 110
Pro Pro Gly Ser Arg Ser Tyr Gly Trp Arg Asp Ser Val Val Leu Arg
        115                 120                 125
Ser Phe Leu Arg Ser Asn Ile Ser Ile Thr Ala Cys Asp Cys Tyr Leu
    130                 135                 140
Ser Tyr Trp Gly Phe Phe Cys Arg Asp His Gly Tyr Tyr Arg Asp Ala
145                 150                 155                 160
Val Asn Lys Ser

<210>593
<211>104
<212>PRT
<213>Chlamydia trachomatis
<400>593
Asn Ile Ser Ser Leu Val Leu Asn Leu Leu Gly Phe Met Arg Ser Leu
  1               5                  10                  15
His Phe Leu Leu Thr Ala Phe Thr Phe Ser Leu Phe Cys Gly Ala Ala
            20                  25                  30
Leu Thr Ala Ser Ser Pro Lys Thr Leu Ser Phe Val Ala Ala Glu Ala
        35                  40                  45
Ala Gly Val Gly Ala Ala Arg Pro Ser Ser Val Ala Ser Leu Leu Asp
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     50                  55                  60
Ser Ala His Glu Val Ala Lys Ser Ala Gly Val Gly Tyr Gly Ser Ala
 65                  70                  75                  80
Tyr Ile Leu Asn Glu Leu Gln Asn Leu Gln Ser Gln Glu Leu Glu Gly
                85                  90                  95
Leu Leu Ala Ser Gln Glu Asn Ile
            100
<210>594
<211>111
<212>PRT
<213>Chlamydia trachomatis
<400>594
Ser Ser Ile Phe Leu Arg Lys Ser Phe Ile Val Ala Glu Tyr Arg Ala
  1               5                  10                  15
Ile Phe Val Met Ala Met Asn His Tyr Asn Asp Arg Gln Thr Leu Pro
            20                  25                  30
Ser Met Asp Glu Met Met Ser Leu Val Val Gly Thr Glu Ala Met Thr
        35                  40                  45
Leu Leu Val Ala Arg Arg Met Asn Thr Glu Leu Met Arg Asp Ile Val
     50                  55                  60
Val Gln Ser Ile Gln Lys Leu Leu Asp Lys His Trp Arg Asp Arg Lys
 65                  70                  75                  80
Arg Lys Leu Cys His Gln Thr Gly Lys Gly Leu Asp Ser Leu Gln Glu
                85                  90                  95
Tyr Val Arg Leu Ser Gly Glu Arg Val Lys Val Ser Leu Val Ser
            100                 105                 110
<210>595
<211>144
<212>PRT
<213>Chlamydia trachomatis
<400>595
Xaa His Ser Tyr Glu Gln Phe Thr Pro Arg Glu Lys Ala Arg Val Ile
  1               5                  10                  15
Glu Glu Val Ile Gln Gln Val Arg Cys Trp Gly Ser Pro Ile Thr Ile
            20                  25                  30
His Glu Tyr Leu Arg Gln Leu Ala Ser Leu Val Lys Val Pro Glu Pro
        35                  40                  45
Ala Val Leu Ser Tyr Leu Ser Ser Ile Thr Ser Ala Ala Glu Asp Lys
     50                  55                  60
Gly Lys Lys Val Ser Ala Lys Glu Pro Ser Ser Glu Ser Glu Gln Thr
 65                  70                  75                  80
Ser Thr Glu Gly Lys Ile Ser Lys Lys Ile Ser Pro Arg Met Ile Leu
                85                  90                  95
Glu Ala Asp Val Ile Arg Cys Leu Leu Phe Ala Lys Pro Glu Asp Glu
            100                 105                 110
Phe Val Pro Ala Thr Val Lys Gln Tyr Leu Ser Pro Glu Glu Phe His
        115                 120                 125
Cys Gly Arg Ile Ser Ser Tyr Ile Cys Tyr Gly Tyr Glu Ser Leu Gln
    130                 135                 140
<210>596
<211>203
<212>PRT
<213>Chlamydia trachomatis
<400>596
Ser Gly Leu Gly Ile Ser Leu Lys Thr Gly Phe Cys Leu Leu Arg Ser
  1               5                  10                  15
Ile Met Phe Pro Ile Gln Asp Ala Leu Gly Tyr Thr Ile Gly Phe Ser
            20                  25                  30
Ser Arg Arg Phe Lys Glu Gly Gly Arg Gly Gly Lys Tyr Ile Asn Ser
        35                  40                  45
Pro Glu Thr Ile Leu Phe Lys Lys Ser Arg Val Leu Tyr Gly Leu Gln
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     50                  55                  60
Phe Ser Arg Lys Arg Ile Ala Lys Glu Arg Arg Val Ile Leu Val Glu
 65                  70                  75                  80
Gly Gln Ala Asp Cys Leu Gln Met Ile Asp Phe Gly Phe Asn Cys Thr
                 85                  90                  95
Leu Ala Ala Gln Gly Thr Ser Phe Thr Glu Thr His Val His Glu Leu
            100                 105                 110   .
Val Lys Leu Gly Val Ser Lys Ala Tyr Leu Leu Phe Asp Gly Asp Ala
        115                 120                 125
Ala Gly Glu Lys Ala Ser Leu Arg Val Gly Asp Leu Cys Gln Ala Ala
    130                 135                 140
Gly Ile Thr Ala Ile Val Cys Arg Leu Pro Ser Gly Gln Asp Pro Asp
145                 150                 155                 160
Ser Phe Leu Met Gln Arg Gly Pro Glu Glu Leu Arg Glu Leu Leu Asp
                165                 170                 175
Arg Gly Glu Asp Tyr Leu Ser Phe Leu Val Trp His Lys Xaa Ile Leu
            180                 185                 190
Met Asn Ser Leu Leu Gln Glu Lys Lys Leu Glu
        195                 200
<210>597
<211>223
<212>PRT
<213>Chlamydia trachomatis
<400>597
Met Tyr Tyr Thr Glu Glu Ser Leu Glu Thr Leu Lys His Ser Ile Asp
  1                 5                  10                  15
Ile Val Ser Val Leu Gly Glu Tyr Val His Leu Lys Arg Ser Gly Ala
             20                  25                  30
Asp Tyr Lys Ala Cys Cys Pro Phe His Asp Glu Lys Thr Pro Ser Phe
         35                  40                  45
Ile Val Tyr Pro Thr Arg Gly His Tyr His Cys Tyr Gly Cys Gly Glu
     50                  55                  60
His Gly Asp Ala Ile Asn Phe Leu Met Lys Gln Gln Gly Tyr Ser Phe
 65                  70                  75                  80
Ser Glu Ala Val Leu Phe Leu Ala Lys Lys Phe His Val Asp Leu Val
                 85                  90                  95
Val Arg Thr Arg Glu Thr Ser Gly Gln Asp Ser Lys Asp Ser Phe Arg
            100                 105                 110
Arg Ile Asn Arg Glu Ala Glu Arg Phe Phe Gln Tyr Cys Leu Leu His
        115                 120                 125
Leu Pro Glu Gly Glu Glu Ala Leu Ala Tyr Leu Tyr Lys Arg Gly Phe
    130                 135                 140
Ser Pro Asp Thr Ile Asp Arg Phe Gln Ile Gly Tyr Ala Pro Glu Gln
145                 150                 155                 160
Arg Leu Phe Ile Gln Ala Met Glu Glu Arg Asn Ile Cys Val Lys Gln
                165                 170                 175
Leu Glu Trp Ala Gly Tyr Leu Ala Lys Asp Trp Phe Leu Phe Ala Gln
            180                 185                 190
Glu His His Val Pro Asp Ser Arg Cys Phe Arg Leu Tyr His Trp Ile
        195                 200                 205
Phe Phe Ser Glu Val Gln Arg Arg Trp Ala Trp Trp Lys Ile Tyr
    210                 215                 220
<210>598
<211>94
<212>PRT
<213>Chlamydia trachomatis
<400>598
Leu Tyr Leu Val Leu Arg Asp Arg Lys Asn Phe Leu Phe Val Val Gly
  1                 5                  10                  15
Glu Gln Ala Leu Met Tyr Gln Arg Thr Phe Glu Thr Arg Val Tyr Asn
             20                  25                  30
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Gly Val Glu Phe Leu Gly Asn Thr Arg Leu Trp Glu Ala Lys Phe Leu
35 40 45
Arg Glu Lys Gly Ile His Gln Gly Glu Arg Ser Thr His Ser Gln Glu
50 55 60
Asn Tyr Ser Ala Leu Pro Trp Arg Ile Leu Tyr Arg Arg Arg Ala Gly
65 70 75 80
Ile Ala Cys Lys Lys Ile Leu Tyr Asp Ala Tyr Ile His Glu
85 90

<210>599
<211>457
<212>PRT
<213>Chlamydia trachomatis
<400>599
Glu Pro Val Pro Leu Leu Arg Ile Lys Asn Phe Phe Asp His Ala Ile
1 5 10 15
Leu Asp Lys Ala Met Thr His Lys Leu Thr Pro Met Met Gln Gln Trp
20 25 30
His Gln Cys Lys Glu Gln Ala Gly Asp Cys Leu Leu Leu Phe Arg Leu
35 40 45
Gly Glu Phe Tyr Glu Ala Phe Phe Asp Asp Ala Leu Ile Leu Ala Gln
50 55 60
Asn Leu Asp Ile Thr Leu Thr Gln Arg Gln Asn Val Pro Met Ser Gly
65 70 75 80
Ile Pro Ala Thr Cys Leu Asp Gly Tyr Val Asp Arg Leu Val Ser Arg
85 90 95
Gly Phe Lys Val Ala Ile Ala Glu Gln Ala Asp Asn Thr Glu Gly Ser
100 105 110
Lys Gly Leu Val Pro Arg Thr Ile Asn Arg Leu Ile Thr Pro Gly Ala
115 120 125
Leu Leu Ser Ser Ser Leu Leu Pro Glu Lys Ala Asn Asn Tyr Val Leu
130 135 140
Ala Ile Asn Gln Val Gly Ser Leu Tyr Gly Leu Ser Cys Leu Asp Leu
145 150 155 160
Ser Ile Gly Thr Phe Leu Val Ala Glu Tyr Asp Asn Thr Lys Asp Leu
165 170 175
Ile Glu Ala Ile Cys Arg Leu Ala Pro Thr Glu Leu Leu Ser His Ala
180 185 190
Lys Phe Tyr Gln Lys Asn Ala Ala Val Ile Lys Gln Leu Gln Gln His
195 200 205
Leu Arg Ile Thr Leu Ser Glu Tyr Val Ser Trp Ala Phe Glu Tyr Gln
210 215 220
Ser Ala Thr Lys Lys Leu Tyr Thr Cys Phe Gln Val Ser Ser Leu Asp
225 230 235 240
Gly Phe Gly Leu Gln Gly Leu Val Pro Ala Ile Asn Ala Ala Gly Ala
245 250 255
Leu Leu Ser Tyr Ile Gln Asp Lys Leu Leu Leu Pro Ile Ser His Leu
260 265 270
Ser Ile Pro Lys Ile Tyr Gly Gln Gln Lys His Leu Leu Ile Asp Lys
275 280 285
Ala Ser Gln Thr Asn Leu Glu Leu Leu Ser Pro Ile His Gly Glu His
290 295 300
Gly Lys Gly Ser Leu Leu Gln Val Met Glu Arg Thr Ser Thr Pro Met
305 310 315 320
Gly Gly Arg Leu Leu Arg Asn Thr Leu Ile Asn Pro Phe Tyr Asp Leu
325 330 335
Lys Glu Ile Thr Leu Arg Gln Asp Ser Val Glu Phe Phe Leu Gln Gln
340 345 350
Glu Asp Leu Arg Lys Ile Leu Lys Arg Gln Leu Ser Cys Val Arg Asp
355 360 365
Leu Glu Arg Leu Ala Thr Lys Ile Ser Thr Ser Leu Ala Thr Pro Lys
370 375 380

Sequence Listing

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Asp Ile Gly Thr Leu Arg Asp Ser Leu Leu Ser Cys Thr His Ile Ala
385                 390                 395                 400
Asn Asn Leu Gln Asn Cys Ala Leu Pro Glu Phe Leu Glu Asn Lys Phe
                405                 410                 415
Leu Ile Ala Pro Pro Leu Cys Ser Leu Ile Lys Thr Leu Ser Thr Glu
            420                 425                 430
Leu Ile Gln Glu Leu Pro Leu Lys Val Ser Glu Gly Ile Phe Ser Gln
        435                 440                 445
Thr Thr Ile Ile Gln Ile Phe Tyr Asp
    450                 455
<210>600
<211>425
<212>PRT
<213>Chlamydia trachomatis
<400>600
Val Phe Asp Cys Ser Pro Ser Met Leu Ser His Lys Asn Val Ile Asp
  1                 5                  10                  15
Arg Ala Tyr Pro Arg Thr Ser Phe Lys Ser Val Arg Arg Asn Ile Phe
             20                  25                  30
Ala Asn His Tyr His Pro Asp Leu Leu Arg Leu Arg Asn Ile Lys Glu
         35                  40                  45
Asn Ser Lys Ser Trp Ile Leu Glu Tyr Gln Glu Arg Ile Arg Asn Glu
     50                  55                  60
Thr Gly Ile Lys Lys Leu Lys Val Cys Tyr Ala Gln Ala Leu Gly Tyr
 65                  70                  75                  80
Tyr Ile Glu Val Ala Ser Asn Leu Ala Pro Gln Leu Pro Lys Glu Phe
                85                  90                  95
Ile Arg Arg Gln Ser Arg Leu His Ala Glu Arg Phe Thr Thr Gln Glu
            100                 105                 110
Leu Gln Gln Phe Gln Asp Glu Val Phe Ser Val Glu Asp Lys Leu Gln
        115                 120                 125
Thr Leu Glu Thr Lys Leu Phe Lys Glu Leu Cys Phe Tyr Ile Val Glu
    130                 135                 140
His Arg Asp Leu Ile Leu Lys Leu Ser Thr Ala Val Ala Asp Leu Asp
145                 150                 155                 160
Tyr Val Val Ser Leu Ala Glu Leu Ala Ala Glu Tyr Asp Tyr Arg Arg
                165                 170                 175
Pro Leu Val Asp His Ser Asp Ala Leu Ser Ile Thr Lys Gly Met His
            180                 185                 190
Pro Val Ala Leu Thr Leu Leu Asp Lys Gly Thr Phe Ile Pro Asn Asp
        195                 200                 205
Thr Val Met His Ser Ala Gln Thr Arg Met Ile Leu Leu Thr Gly Pro
    210                 215                 220
Asn Met Ala Gly Lys Ser Thr Tyr Ile Arg Gln Ile Ala Leu Leu Val
225                 230                 235                 240
Ile Met Ala Gln Met Gly Ser Phe Ile Pro Ala Arg Ser Ala His Ile
                245                 250                 255
Gly Ile Val Asp Lys Ile Phe Thr Arg Ile Gly Ala Gly Asp Asn Leu
            260                 265                 270
Ser Lys Gly Met Ser Thr Phe Met Val Glu Met Ala Glu Thr Ala Asn
        275                 280                 285
Ile Leu His Asn Ala Thr Asp Arg Ser Leu Val Ile Leu Asp Glu Ile
    290                 295                 300
Gly Arg Gly Thr Ser Thr Tyr Asp Gly Leu Ala Ile Ala Gln Ala Val
305                 310                 315                 320
Val Glu Phe Leu Leu Phe Thr Asp Gly Lys Lys Ala Lys Thr Leu Phe
                325                 330                 335
Ala Thr His Tyr Lys Glu Leu Thr Glu Leu Glu Met His Cys Gln His
            340                 345                 350
Val Glu Asn Phe His Ala Met Val Lys Glu Asn Ser Gly Gln Pro Ile
        355                 360                 365
```

Phe Met Tyr Glu Ile Val Lys Gly His Ser Lys Lys Ser Phe Gly Ile
370 375 380
His Val Ala Lys Leu Ala Gly Phe Pro Leu Ser Val Val Ser Arg Ala
385 390 395 400
Gln Gln Ile Leu His Gln Phe Glu Gly Pro Asp Leu Arg Pro Glu Pro
405 410 415
Glu Lys Ala Gln Gln Leu Val Met Phe
420 425

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<212>PRT
<213>Chlamydia trachomatis
<400>601
Val Arg Ile Glu Asp Phe Ser Leu Lys Asp Val Ser Ser Ser Pro Gly
1 5 10 15
Val Tyr Leu Met Lys Asp Ser Gln Gly Thr Val Leu Tyr Val Gly Lys
20 25 30
Ala Lys Asn Leu Arg Asn Arg Leu Ser Ser Tyr Leu Gln Lys Lys Gly
35 40 45
Asp Ser Arg Glu Arg Ile Pro Phe Leu Met Lys Lys Thr Thr Asp Ile
50 55 60
Asp Thr Ile Val Val Ser Asn Glu Thr Glu Ala Ile Leu Leu Glu Asn
65 70 75 80
Asn Leu Ile Lys Lys Tyr Gln Pro Arg Tyr Asn Val Leu Leu Lys Asp
85 90 95
Asp Lys Thr Phe Phe Cys Leu Ser Val Ser Leu Glu His Pro Trp Pro
100 105 110
Arg Ile Glu Ala Ile Arg Thr Arg Ala Leu Ser Pro Gly Lys Lys Lys
115 120 125
Gln Trp Leu Phe Gly Pro Tyr Val Ser Ala Glu Ala Cys Tyr Ala Leu
130 135 140
Leu Glu Val Ile Ser Leu Trp Phe Pro Leu Arg Thr Cys Ser Asp Arg
145 150 155 160
Glu Phe Ser Thr Arg Gln Arg Pro Cys Val Leu Tyr Glu Met Lys Arg
165 170 175
Cys Leu Ala Pro Cys Val Gly Leu Cys Ser Gln Thr Glu Tyr Gln Glu
180 185 190
Thr Leu Asp Lys Ala Ile Leu Phe Leu Lys Gly Asp Val Arg Ser Thr
195 200 205
Ile Ser Asn Leu Glu Lys Ala Ile Glu Lys Ala Ser Gln Glu Gln Lys
210 215 220
Phe Glu His Ala Ala Ala Leu Tyr Arg Thr Leu Thr Leu Ile Arg Gln
225 230 235 240
Thr Met Ala Lys Gln His Val Glu Lys Phe Gln Ala Tyr Asp Ile Asp
245 250 255
Val Leu Gly Leu Tyr Arg Lys Gly Ser Leu Ala Ile Val Ser Val Leu
260 265 270
Ser Val Tyr Ser Gly Lys Leu Leu Gly Ala Arg Tyr Phe Ile Phe Pro
275 280 285
Glu Asn Ala Gln Glu Asp Ser Ala Leu Phe Pro Ser Phe Ile Leu Gln
290 295 300
Tyr Tyr Ala Glu Asn Pro Arg Ile Pro Lys Glu Ile Phe Val Pro Val
305 310 315 320
Ser Leu Asp Ser Pro Glu Leu Pro Tyr Leu Leu Asn Thr Ala Glu Pro
325 330 335
Pro Lys Ile Arg Cys Pro Lys Thr Glu Tyr Gly Lys Glu Leu Leu Ala
340 345 350
Leu Ala His Lys Asn Ala Ala Glu Gln Ala Lys Pro Phe Asn Ser Ile
355 360 365
Thr Pro Pro Tyr Glu Glu Leu Gln His Phe Phe Asn Leu Ser Gln Tyr
370 375 380

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Pro Tyr Arg Ile Glu Cys Tyr Asp Asn Ala His Leu Gln Gly Glu His
385                 390                 395                 400
Asn Val Gly Val Cys Ile Val Phe Glu Asn Asp Leu Phe Ser Pro Lys
                405                 410                 415
Gln Tyr Arg Thr Phe Ser Ile Thr Ser His Gly Asp Asp Leu Ala Ala
            420                 425                 430
Phe Glu Glu Val Leu Thr Arg Arg Phe Arg Ser Leu Thr Thr Glu Leu
        435                 440                 445
Pro Asn Leu Ile Val Ile Asp Gly Gly Arg Asn Gln Phe Lys Arg Ala
    450                 455                 460
Gln Arg Ile Leu Glu Glu Leu Asn Leu Thr Gly Ile Thr Val Val Thr
465                 470                 475                 480
Ile Ala Lys Glu Ser Gly Asn His Ser Lys Ser Cys Ala Lys Lys Ser
                485                 490                 495
Tyr Phe Val Lys Leu Ser Pro Lys Glu Ser Phe Phe Ile Pro His Pro
            500                 505                 510
Gln Phe Phe Ser Ser Phe Ser Tyr Tyr Glu Met Lys Pro Thr Val Ser
        515                 520                 525
Arg Phe Asn Thr Ile Val Lys Asn Met Gln Lys Gln Cys
    530                 535                 540
<210>602
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<213>Chlamydia trachomatis
<400>602
Glu Phe Asn Arg Asp Tyr Arg Ser Asn His Arg Gln Gly Ile Trp Gln
  1                 5                  10                  15
Ser Gln Gln Lys Leu Arg Gln Glu Lys Leu Phe Cys Glu Thr Phe Pro
             20                  25                  30
Gln Gly Ile Leu Leu His Pro Thr Ser Ala Ile Leu Gln Phe Phe Gln
         35                  40                  45
Leu Leu Arg Asp Glu Ala His Arg Phe Ala Ile Gln His Tyr Arg Lys
     50                  55                  60
Lys His Ala Lys Ala Val Leu Thr Thr Lys Lys Ile Pro Gly Ile Gly
 65                  70                  75                  80
Glu Val Lys Thr Lys Arg Leu Leu Gln Lys Phe Lys Ser Trp Lys Arg
                 85                  90                  95
Val Phe Ile Ala Ser Glu Glu Glu Leu Lys Thr Val Gln Gly Ile Thr
            100                 105                 110
Ala Lys Asp Ile Gln Arg Ile Gln Glu Glu Gly Ala Lys Pro Glu
        115                 120                 125
<210>603
<211>144
<212>PRT
<213>Chlamydia trachomatis
<400>603
Ser Arg Tyr Arg Asp Pro Cys Asp Ser Ser Asp His Cys Ser Leu Leu
  1                 5                  10                  15
Ser Lys Asn Arg Trp Gly Phe Ile Ile Arg Xaa Arg Ile Ser Leu Thr
             20                  25                  30
Arg Phe Leu Asp Ala Ile Ser Lys Xaa Xaa Lys Gly Ile Tyr Val Glu
         35                  40                  45
Gln Asp Ser Lys Asn Ser Leu Val Lys Val Arg Val Glu Val Asn Val
     50                  55                  60
Asp Tyr Gly Val Ser Ile Pro Glu Lys Thr Glu Glu Ile Gln Gly Cys
 65                  70                  75                  80
Ile Val Ser Glu Ile Ser Glu Tyr Thr Gly Leu His Val Ala Ala Val
                 85                  90                  95
His Val Val Val Lys Gly Leu Thr His Pro Lys Ala Lys Asp Glu Glu
            100                 105                 110
Val Pro Ala Ile Glu Val Ile Glu Glu Pro Cys Leu Glu Glu Phe Ser
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        115                 120                 125
Ser Ala Glu Glu Tyr Leu Glu Glu Val Ser Val Ile Gln Thr Glu Glu
    130                 135                 140
<210>604
<211>178
<212>PRT
<213>Chlamydia trachomatis
<400>604
Leu Phe Thr Thr Asn Leu Lys Leu Gly Ser Pro Pro Met Asn Ser Gly
  1               5                  10                  15
Met Phe Pro Phe Thr Phe Phe Leu Leu Tyr Ile Cys Leu Gly Met Leu
             20                  25                  30
Thr Ala Tyr Leu Ala Asn Lys Lys Asn Arg Asn Leu Ile Gly Trp Phe
         35                  40                  45
Leu Ala Gly Met Phe Phe Gly Ile Phe Ala Ile Ile Phe Leu Leu Ile
     50                  55                  60
Leu Pro Pro Leu Pro Ser Ser Thr Gln Asp Asn Arg Ser Met Asp Gln
 65                  70                  75                  80
Gln Asp Ser Glu Glu Phe Leu Leu Gln Asn Thr Leu Glu Asp Ser Glu
                 85                  90                  95
Ile Ile Ser Ile Pro Asp Thr Met Asn Gln Ile Ala Ile Asp Thr Glu
            100                 105                 110
Lys Trp Phe Tyr Leu Asn Lys Asp Cys Thr Asn Val Gly Pro Ile Ser
        115                 120                 125
Ile Val Gln Leu Thr Ala Phe Leu Lys Glu Cys Lys His Ser Pro Glu
    130                 135                 140
Lys Gly Ile Asp Pro Gln Glu Leu Trp Val Trp Lys Lys Gly Met Pro
145                 150                 155                 160
Asn Trp Glu Lys Val Lys Asn Ile Pro Glu Leu Ser Gly Thr Val Lys
                165                 170                 175
Asp Glu

<210>605
<211>120
<212>PRT
<213>Chlamydia trachomatis
<400>605
Val Ser Arg Leu Thr Leu Pro Lys Asn Ala Arg Leu Leu Lys Arg Lys
  1               5                  10                  15
Gln Phe Val Tyr Val Gln Arg Asn Gly Arg Cys Cys Arg Ala Asp Gln
             20                  25                  30
Val Thr Leu Arg Val Val Pro Ser Arg His Ser Asn Thr Ser Lys Val
         35                  40                  45
Gly Ile Thr Val Ser Lys Lys Phe Gly Lys Ala His Gln Arg Asn Arg
     50                  55                  60
Phe Lys Arg Ile Val Arg Glu Ala Phe Arg His Val Arg Pro Asn Leu
 65                  70                  75                  80
Pro Gly Cys Gln Val Val Ile Ser Pro Arg Gly Asn Ser Gln Pro Asp
                 85                  90                  95
Phe Leu Lys Leu Ser Glu Glu Leu Leu Gln Arg Ile Pro Glu Ala Leu
            100                 105                 110
Pro Leu Ala Ser Ser Ser Arg Cys
        115                 120
<210>606
<211>99
<212>PRT
<213>Chlamydia trachomatis
<400>606
Ala Val Thr His Phe Thr Val Ala Leu Ile Glu Phe Gln Glu Leu Ala
  1               5                  10                  15
Lys Arg Ser Gln Gly Gln Ser His Val Asn Val Ala Glu Val Ile Ala
```

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```
            20                  25                  30
Pro Leu Ala Glu Tyr Leu Thr Gln Phe Gly Glu Gln Asp Lys Glu Asn
        35                  40                  45
Gln Trp Arg Leu Glu Met Ile Ile Ser Gln Tyr Tyr Leu Asp Ala Gly
    50                  55                  60
Leu Pro Asn Ser Ala Leu Glu His Ala Lys Ile Ala Phe Glu Ser Ala
65                  70                  75                  80
Pro Gln Asp Ile Gln Ser Ser Ile Ser Arg Ser Leu Val His Ile Glu
                85                  90                  95
His Gln Ser
```

<210>607
<211>260
<212>PRT
<213>Chlamydia trachomatis
<400>607

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Glu Phe Met Ser Ser Leu Arg Ile Ala Arg Ser Cys Ser Phe Lys Gln
 1               5                  10                  15
Lys Thr Leu Leu Ala Ala Leu Val Phe Phe Gly Leu Gly Ala Ser Gln
            20                  25                  30
Val Cys Ala Thr Pro Ser Asn Ser Arg Glu Ile Ala Trp Tyr Val Asp
        35                  40                  45
Tyr Gln Glu Ala Arg Asp Glu Ser Arg Glu Lys Asp Leu Pro Met Leu
    50                  55                  60
Leu Phe Phe Ser Gly Ser Asp Trp Asn Gly Ser Cys Met Lys Ile Arg
65                  70                  75                  80
Asp Glu Val Leu Ser Ser Ser Asp Phe Ile Ser Ala Val Ala Asp Gln
                85                  90                  95
Phe Val Cys Val Val Val Asp Phe Pro Arg His Thr Glu Leu Arg Asp
            100                 105                 110
Pro Leu Ile Asn Glu Gln Asn Glu Asp Leu Lys Asn Arg Leu Tyr Val
        115                 120                 125
Asn Thr Phe Pro Ser Leu Val Leu Leu Ser Pro Glu Glu Arg Ala Ile
    130                 135                 140
Tyr Lys Ile Glu Ser Phe Gly Asn Glu Asn Gly Ser Asn Leu Gly Glu
145                 150                 155                 160
Ser Leu Cys Arg Val Ile Ala Asn Asp Gln Glu Leu Glu Gln Val Phe
                165                 170                 175
Pro Leu Ile Pro Thr Leu Ser Ser Val Ala Leu Arg Lys Tyr Tyr Gln
            180                 185                 190
Leu Ala Glu Glu Leu Ser Arg Lys Asp Phe Met Ala Thr Ala Leu Glu
        195                 200                 205
Gln Gly Val Leu Cys Asp Asp Ser Phe Phe Leu Ser Glu Lys Phe Arg
    210                 215                 220
Gln Leu Val Glu Ala Gly Arg Met Asp Ser Glu Glu Cys Arg Ala Val
225                 230                 235                 240
Lys Asn Arg Leu Leu Glu Leu Asp Pro Glu Asn Glu Gln Ser Arg Ile
                245                 250                 255
Ser Gln Trp Leu
            260
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<210>608
<211>500
<212>PRT
<213>Chlamydia trachomatis
<400>608

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Leu Leu Ile Met Lys Gly Trp Ile Arg Ser Asn Ser Thr Lys Thr Arg
 1               5                  10                  15
Pro Phe Arg Met Asn Thr Ala Ile Asp Leu Phe Leu Tyr Asn Thr Leu
            20                  25                  30
Ser Arg Glu Lys Glu Arg Phe Leu Pro Val Asn Asp Pro Val Lys Leu
        35                  40                  45
```

Tyr Thr Cys Gly Pro Thr Val Tyr Asp Tyr Ala His Ile Gly Asn Phe
50 55 60
Arg Thr Tyr Ile Phe Glu Asp Leu Leu Lys Arg Val Leu Leu Phe Leu
65 70 75 80
Gly Tyr Ser Val Tyr His Val Met Asn Ile Thr Asp Val Asp Asp Lys
85 90 95
Thr Leu Ala Gly Ala Arg Lys Lys Gly Cys Ser Leu Glu Lys Tyr Cys
100 105 110
Gln Pro Tyr Ile His Ala Phe Phe Ala Asp Leu Glu Thr Leu His Ile
115 120 125
Leu Lys Ala Asp Ala Tyr Pro His Ala Thr His Tyr Ile Pro Gln Met
130 135 140
Ile Glu Ala Ile Gln Gln Leu Ile Asn Gln Gly Val Ala Tyr Ile Gly
145 150 155 160
Gln Asp Gln Ser Val Tyr Phe Ser Ile Ser Gln Phe Pro Asn Tyr Gly
165 170 175
Ala Leu Ser His Leu Asn Leu Glu Glu Leu Arg Asn Ser Ala Arg Ile
180 185 190
Asp Ala Asp Glu Tyr Asp Lys Asp Asn Leu Cys Asp Phe Val Leu Trp
195 200 205
Lys Ala Tyr Asp Pro Asp Arg Asp Gly Glu Ile Phe Trp Glu Ser Pro
210 215 220
Phe Gly Lys Gly Arg Pro Gly Trp His Leu Glu Cys Ser Ile Met Ser
225 230 235 240
Met Ser Leu Leu Gly Gln Ser Leu Asp Ile His Ala Gly Gly Val Asp
245 250 255
Asn Ile Phe Pro His His Glu Asn Glu Ile Ala Gln Ser Glu Ser Leu
260 265 270
Thr His Lys Pro Phe Val Arg Tyr Trp Leu His Ser His His Leu Leu
275 280 285
Val Asp Arg Lys Lys Met Ser Lys Ser Leu Gly Asn Phe Phe Thr Leu
290 295 300
Arg Asp Leu Leu Asp Gln Gly Phe Ser Gly Glu Glu Val Arg Tyr Leu
305 310 315 320
Leu Leu Gln Gly His Tyr Arg Thr Gln Leu Asn Phe Thr Gln Glu Gly
325 330 335
Leu His Ala Ser Arg Gln Ser Leu Lys Arg Leu Arg Asp Phe Ile Cys
340 345 350
Arg Leu Glu Asp Pro Ser Tyr Pro Asp Asp Ile Ile His Pro Glu Val
355 360 365
Ala Thr Ala Cys Gln Ser Phe Leu Glu Thr Phe Ile Thr Ser Leu Thr
370 375 380
Asn Asp Leu Asn Ile Ser Ser Ser Leu Ala Ala Leu Phe Asp Phe Ile
385 390 395 400
Arg Lys Ile Asn Ser Ser Ile Asp Gln His Thr Gly Ile Gln Thr Glu
405 410 415
Thr Asp Ser Ser Val Phe Ser Lys Gln Asp Ala Gln His Ile Leu Ala
420 425 430
Leu Leu Arg Lys Ile Asp Gln Val Leu Gly Val Leu Pro Phe Ser Gln
435 440 445
Pro Asp Ile Pro Glu Glu Val Leu Leu Leu Val Glu Gln Arg Glu Ala
450 455 460
Ala Arg Lys Val Lys Asn Trp Gln Glu Ala Asp Arg Leu Arg Asp Glu
465 470 475 480
Ile Leu Ser Arg Gly Phe Ala Ile Glu Asp Gly Lys Thr Gly Met Lys
485 490 495
Val Lys Lys Leu
500

<210>609
<211>161
<212>PRT

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<213>Chlamydia trachomatis
<400>609

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Asn Phe Arg Asn Thr Asn Ile Ser Pro Glu Lys Thr Tyr Val His Ala
  1               5                  10                  15
Ser Arg Gly Glu Leu Ile Ala Leu Leu Phe Asp Glu Leu Val Cys Asp
             20                  25                  30
Lys Leu Ile Ala Pro His His Ile Thr Asp His Pro Leu Glu Thr Thr
         35                  40                  45
Pro Leu Cys Lys Thr Leu Arg Ser Gly Asp Glu Thr Leu Val Glu Arg
     50                  55                  60
Phe Glu Ser Phe Cys Leu Gly Lys Glu Leu Cys Asn Ala Tyr Ser Glu
 65                  70                  75                  80
Leu Asn Asp Pro Leu Gln Gln Arg Lys Leu Leu Glu Glu Gln Met Arg
                 85                  90                  95
Lys Lys Ala Leu Asn Pro Asp Ser Glu Tyr His Pro Ile Asp Glu Glu
            100                 105                 110
Phe Leu Glu Ala Leu Cys Gln Gly Met Pro Pro Ala Gly Gly Phe Gly
        115                 120                 125
Ile Gly Ile Asp Arg Leu Val Met Met Leu Thr Asp Ala Ala Ser Ile
    130                 135                 140
Arg Asp Val Leu Phe Phe Pro Val Met Arg Arg Ile Glu Ala Lys Lys
145                 150                 155                 160
Asp
```

<210>610
<211>237
<212>PRT
<213>Chlamydia trachomatis
<400>610

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Glu Ile Ala Lys Pro Phe Arg Lys Glu Thr Pro Lys Val Arg Phe Ala
  1               5                  10                  15
Gly Arg Leu Val Leu Phe Arg Ser Met Gly Lys Asn Ala Phe Gly Gln
             20                  25                  30
Ile Leu Asp Asn Asp Ala Lys Ile Gln Val Met Phe Asn Arg Asp Phe
         35                  40                  45
Ser Ala Val Ala Gly Leu Ala Ala Asp Ala Gly Ile Ser Pro Ile Lys
     50                  55                  60
Phe Ile Glu Lys Lys Leu Asp Leu Gly Asp Ile Leu Gly Leu Glu Gly
 65                  70                  75                  80
Tyr Leu Phe Phe Thr His Ser Gly Glu Leu Thr Val Leu Val Glu Thr
                 85                  90                  95
Val Thr Leu Leu Cys Lys Ser Leu Ile Ser Leu Pro Asp Lys His Ala
            100                 105                 110
Gly Leu Ala Asp Lys Glu Ile Arg Tyr Arg Lys Arg Trp Ala Asp Leu
        115                 120                 125
Ile Ser Ser Glu Asp Val Arg Lys Thr Phe Leu Thr Arg Ser Arg Ile
    130                 135                 140
Leu Lys Leu Ile Arg Glu Tyr Met Asp Gln Gln Ser Phe Leu Glu Val
145                 150                 155                 160
Glu Thr Pro Ile Leu Gln Thr Val Tyr Gly Gly Ala Glu Ala Thr Pro
                165                 170                 175
Phe Val Thr Thr Leu Gln Gly Leu His Ala Glu Met Phe Leu Arg Ile
            180                 185                 190
Ser Leu Glu Ile Ala Leu Lys Lys Leu Leu Val Gly Gly Met Ser Arg
        195                 200                 205
Val Tyr Glu Ile Gly Lys Val Phe Arg Asn Glu Gly Ile Asp Arg Thr
    210                 215                 220
His Asn Pro Glu Phe Thr Met Ile Glu Ala Ala Ser Met
225                 230                 235
```

<210>611
<211>150

<212>PRT
<213>Chlamydia trachomatis
<400>611

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Gly Ala Cys Ser Ser His Val Trp Arg Ser Gln Leu Leu Val Leu Leu
  1               5                  10                  15
Gln Asn Val Val Leu Arg Val Arg Arg Arg Ser Asn Arg Val Ala Glu
             20                  25                  30
Thr Gly Ile His Trp Met Ser Tyr Gln Asp Ala Leu Asn Lys Ala Lys
         35                  40                  45
Gln Glu Gly Lys His Val Ala Val Phe Phe Thr Gly Ser Asp Trp Cys
     50                  55                  60
Ile Trp Cys Met Arg Met Gln Asp Gln Ile Leu Gln Thr Ala Ala Phe
 65                  70                  75                  80
Ser Glu Phe Asp Lys Gln Tyr Leu Cys Met Val Glu Ile Asp Phe Pro
                 85                  90                  95
His Asn Lys Glu Gln Thr Ala Glu Gln Lys Glu Gln Asn Arg His Leu
            100                 105                 110
Lys Ser Leu Tyr Ser Val Asp Gly Phe Pro Thr Leu Val Phe Leu Asp
        115                 120                 125
Ser Glu Gly Xaa Glu Val Ala Lys Met Gly Phe Glu Pro Gly Gly Gly
    130                 135                 140
Gly His Met Phe Ile Asp
145                 150
```

<210>612
<211>762
<212>PRT
<213>Chlamydia trachomatis
<400>612

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Lys Arg Phe Ser Ile Lys Lys Arg Phe Met Asp Pro Thr His Gln Pro
  1               5                  10                  15
Phe Arg Leu Tyr Ala Glu Val Ile Val Asn Ala Asn Ile Asn Lys Ile
             20                  25                  30
Leu Asp Tyr Gly Ile Pro Ala Glu Leu Glu Asn Leu Val Thr Val Gly
         35                  40                  45
Ser Val Val Lys Val Pro Leu Gln Arg Lys Leu Thr Asn Asp Lys Tyr
     50                  55                  60
Lys Ile Ala Ile Val Leu Lys Ile Lys Ser Ser Ser Asp Phe Val His
 65                  70                  75                  80
Val Ile Gln Pro Ile Leu Asp Ile Ser Tyr Glu Gly Ile Thr Leu Pro
                 85                  90                  95
Gln Asp Leu Ile Asp Leu Ile Phe Trp Ile Ser Gln Tyr Tyr Phe Cys
            100                 105                 110
Pro Leu Gly Ser Ala Val Ser Leu Phe Leu Pro Thr Val Tyr Ala Gln
        115                 120                 125
Thr His Ser Thr Lys His Gln Asn Asn Val Phe Leu Gly Gln Asn Ala
    130                 135                 140
Glu Arg Thr Gln Glu Ile Leu Lys Thr Leu Asp Asn Pro Gln Gln Ile
145                 150                 155                 160
Ala Val Leu Arg Lys Leu Leu Lys Thr Thr Lys Pro Leu Thr Pro Pro
                165                 170                 175
Glu Leu Met Arg Lys Thr Glu Val Ser Ala Lys Thr Leu Asp Ala Leu
            180                 185                 190
Val Lys Gln Lys Phe Ile Arg Ile Val Asp Ser Ala Asp Leu Glu Ile
        195                 200                 205
Gln Asp Glu Gln Leu His Tyr Phe Leu Pro Glu Thr Pro Thr Leu Asn
    210                 215                 220
Gln Glu Gln Leu Asp Ala Ile Asn Thr Ile Ser Gln Ser Leu Val Ala
225                 230                 235                 240
Glu Gln Phe Gln Thr Cys Leu Leu Phe Gly Val Thr Gly Ser Gly Lys
                245                 250                 255
Thr Glu Val Tyr Leu Gln Val Ile Arg Lys Ala Arg Ala Leu Gly Lys
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            260                 265                 270
Ser Val Ile Leu Leu Val Pro Glu Val Ala Leu Thr Ile Gln Thr Leu
        275                 280                 285
Ser Phe Phe Lys Met His Phe Gly Ser Glu Val Gly Val Leu His Tyr
    290                 295                 300
Lys Leu Ser Asp Ser Glu Arg Thr Gln Thr Trp His Lys Ala Ser Arg
305                 310                 315                 320
Gly Leu Ile Asn Ile Ile Ile Gly Pro Arg Ser Ala Ile Phe Cys Pro
                325                 330                 335
Ile Gln Asn Leu Gly Leu Ile Ile Val Asp Glu Glu His Asp Ser Ala
            340                 345                 350
Tyr Lys Gln Ser Asp Leu Pro Pro Phe Tyr Gln Ala Arg Asp Val Ala
        355                 360                 365
Val Met Arg Gly Lys Met Thr Asn Ala Thr Val Ile Leu Gly Ser Ala
    370                 375                 380
Thr Pro Ser Leu Glu Ser Tyr Thr Asn Ala Leu Ser Lys Lys Tyr Thr
385                 390                 395                 400
Leu Ser Val Leu Ser Lys Arg Ala Ser Thr Ser Thr Pro Thr Lys Val
                405                 410                 415
Phe Leu Ile Asp Met Asn Leu Glu Ile Glu Lys Thr Arg Lys Lys Pro
            420                 425                 430
Phe Phe Ser Gln Thr Val Ile Arg Ser Ile Glu Gln Arg Leu Glu Val
        435                 440                 445
Gly Glu Gln Thr Ile Ile Phe Phe Asn Arg Arg Gly Phe His Thr Asn
    450                 455                 460
Val Ser Cys Ser Ser Cys Lys Tyr Thr Leu Lys Cys Pro His Cys Asp
465                 470                 475                 480
Met Ile Leu Thr Phe His Lys Thr Glu Arg Ile Leu Leu Cys His Leu
                485                 490                 495
Cys Asn Thr Arg Leu Ser Lys Pro Ile Thr Ser Cys Pro Gln Cys Leu
            500                 505                 510
Gly Thr Met Thr Leu Gln Tyr Arg Gly Thr Gly Thr Glu Lys Ile Glu
        515                 520                 525
Thr Leu Leu Arg Glu Phe Phe Pro Thr Ala Arg Thr Ile Arg Leu Asp
    530                 535                 540
Ser Asp Thr Thr Arg Phe Arg Gly Ser His Asp Ala Leu Val Lys Gln
545                 550                 555                 560
Phe Ala Thr Gly Lys Ala Asp Ile Leu Ile Gly Thr Gln Met Ile Ala
                565                 570                 575
Lys Gly Met His Phe Pro Ala Val Thr Leu Ser Val Val Leu Ser Gly
            580                 585                 590
Asp Ser Gly Leu Tyr Ile Pro Asp Phe Arg Ala Ala Glu Gln Val Phe
        595                 600                 605
Gln Leu Ile Thr Gln Val Thr Gly Arg Ser Gly Arg Ser His Leu Pro
    610                 615                 620
Gly Glu Val Leu Ile Gln Thr Phe Leu Pro Gln Asn Ser Thr Ile Ser
625                 630                 635                 640
His Ala Leu Ala Gln Asp Phe Pro Ala Phe Tyr Lys Glu Glu Ile Leu
                645                 650                 655
Gly Arg Lys Val Cys Asn Tyr Pro Pro Phe Thr Arg Leu Ile Arg Cys
            660                 665                 670
Ile Phe Leu Gly Lys Cys Ser Asp Tyr Thr Leu Lys Glu Thr Gln Arg
        675                 680                 685
Val His Thr Leu Ile Lys Gln Asn Leu Asp Ser Gln Ala Ser Leu Met
    690                 695                 700
Glu Ile Ser Pro Cys Gly His Phe Lys Val Lys Asp Leu Phe His Tyr
705                 710                 715                 720
Gln Phe Leu Ile Lys Thr Arg Asn Ile Leu Val Ala Asn Lys Gln Ile
                725                 730                 735
Gln Glu Ala Leu Ala Ala Ala Lys Leu Ser Ser Lys Val Arg Cys Ile
            740                 745                 750
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Val Asp Val Asp Pro Val Thr Thr Phe Phe
        755                 760
<210>613
<211>381
<212>PRT
<213>Chlamydia trachomatis
<400>613
Gly Lys Trp Val Leu Lys Glu Ala Leu Ser Ile Asp Phe Ile Thr Asn
  1               5                  10                  15
Asp Phe Leu Gly Phe Ser Arg Leu Asp Ser Leu Val His Ala Val Glu
             20                  25                  30
Ala Arg Tyr Arg Leu Tyr Cys Arg Asp Lys Pro His Ala Gln Leu Gly
         35                  40                  45
Tyr Gly Gly Ser Arg Ala Ile Leu Gly Ser Ser Ser Leu Leu Asp Gly
     50                  55                  60
Val Glu His Gln Ile Ala His Phe His Gly Ala Pro Glu Ala Leu Ile
 65                  70                  75                  80
Leu Pro Ser Gly Phe Val Ala Asn Thr Ala Ile Cys Ala His Leu Ser
                 85                  90                  95
Ser Val Ala Asp Tyr Val Leu Trp Asp Glu Gln Val His Ile Ser Val
            100                 105                 110
Ser Tyr Asn Leu Ser Val Phe Leu Ser Gly Trp His Gln Ser Phe Arg
        115                 120                 125
His Asn Asp Leu Asp His Leu Glu Ser Leu Leu Glu Ser Cys Gln Gln
    130                 135                 140
Arg Gly Phe Gln Arg Val Phe Ile Leu Val Cys Ser Val Tyr Ser Phe
145                 150                 155                 160
Lys Gly Ser Phe Ala Pro Leu Glu Gln Ile Val Ala Leu Ser His Gln
                165                 170                 175
Tyr His Ala Gln Leu Ile Val Asp Glu Ala His Ala Val Gly Leu Phe
            180                 185                 190
Gly Asp Ala Gly Lys Gly Phe Cys Ala Ser Leu Gly Tyr Glu Asn Phe
        195                 200                 205
Tyr Ser Val Leu Val Thr Phe Ser Lys Ala Leu Gly Ser Ala Gly Ala
    210                 215                 220
Ala Trp Leu Ser Ser Cys Asp Arg Lys Gln Asp Leu Ile Lys Glu Pro
225                 230                 235                 240
Met Val Ser Leu Ser Thr Gly Ile Pro Pro Tyr Leu Leu Val Ser Ile
                245                 250                 255
Gln Val Ala Tyr Glu Phe Leu Ser Gln Glu Gly Glu Leu Ala Arg Thr
            260                 265                 270
Arg Leu Arg Arg Ile Arg Asp Tyr Phe Ala Gln Lys Ile Ser Trp Ala
        275                 280                 285
Ala Ala Gly Phe Val Gln Pro Leu Ser Leu Pro Gly Ile Ser Glu Gln
    290                 295                 300
Glu Leu Tyr Gln Lys Leu Val Ala Thr Gly Ile Arg Val Gly Val Ala
305                 310                 315                 320
Cys Pro Pro Thr Gly Lys Val Leu Arg Ala Asn Leu His Ala Phe Asn
                325                 330                 335
Thr Glu Gln Glu Val Asp Ile Leu Val Ser Leu Leu Ala Thr Glu Gln
            340                 345                 350
Val Thr Tyr Gln Lys Asn Val Val Thr Gly Ser Thr Ser Thr Met Gln
        355                 360                 365
Arg Thr Leu Glu Asp Asn Phe Ala Ala Ala Asn Ala Ser
    370                 375                 380
<210>614
<211>538
<212>PRT
<213>Chlamydia trachomatis
<400>614
Glu Met Arg Asp Asn Arg Asn Thr Ala Arg Ser Lys Arg Gly Lys Leu
```

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  1               5                  10                  15
Arg Ser Glu Lys Thr Val Leu Arg Ser Phe Leu Lys Leu Cys Ala Glu
            20                  25                  30
Met Thr Thr Ala Thr Val Phe Trp Asp Glu Gln Leu Gly Lys Leu Ser
        35                  40                  45
Tyr Asn Gln Val Tyr Lys Ala Val Cys Ala Leu Ala Thr Arg Leu Ala
    50                  55                  60
Asn Tyr Pro Asp Gln His Ile Gly Ile Met Met Pro Ala Ser Ala Gly
65                  70                  75                  80
Ala Tyr Ile Ala Tyr Phe Ala Thr Leu Leu Ser Gly Lys Ile Pro Val
                85                  90                  95
Met Ile Asn Trp Ser Gln Gly Leu Arg Glu Val Thr Ala Cys Ala Asn
            100                 105                 110
Leu Val Gly Val Thr His Val Ile Thr Ala Lys Pro Leu Met Gln Lys
        115                 120                 125
Leu Ala Gln Thr His Gly Glu Asp Ala Glu Tyr Pro Phe Ser Leu Xaa
    130                 135                 140
Phe Leu Asp Glu Val Arg Lys Glu Leu Ser Phe Leu Glu Lys Cys Arg
145                 150                 155                 160
Val Gly Ile Cys Met Ser Ile Pro Phe Glu Trp Met Met Arg Trp Phe
                165                 170                 175
Gly Val Phe Asp Lys Asp Pro Glu Asp Val Ala Val Ile Leu Phe Thr
            180                 185                 190
Ser Gly Thr Glu Lys Leu Pro Lys Gly Val Pro Leu Thr Asn Ala Ser
        195                 200                 205
Leu Leu Ala Asn Gln Arg Ala Cys Phe Asp Cys Phe Ser Pro Lys Glu
    210                 215                 220
Asp Asp Ala Met Ile Ser Phe Leu Pro Pro Phe His Ala Tyr Gly Phe
225                 230                 235                 240
Asn Ser Cys Thr Leu Phe Pro Leu Leu Ser Gly Ile Pro Val Val Phe
                245                 250                 255
Ala Tyr Asn Pro Leu Tyr Ala Lys Lys Ile Val Glu Met Ile Asp Glu
            260                 265                 270
Ala Lys Val Thr Leu Leu Gly Ser Thr Pro Val Phe Leu Ser Tyr Ile
        275                 280                 285
Ile Asn Ala Ala Lys Lys Ser Glu Thr Thr Leu Pro Ser Leu Arg Phe
    290                 295                 300
Val Val Val Gly Gly Asp Val Phe Lys His Ser Leu Tyr Gln Glu Ala
305                 310                 315                 320
Leu Lys Thr Phe Pro His Val Gln Leu Arg Gln Gly Tyr Gly Thr Thr
                325                 330                 335
Glu Cys Ser Pro Val Ile Thr Ile Asn Thr Val Asn Ser Pro Lys His
            340                 345                 350
Glu Ser Cys Val Gly Met Pro Val Arg Gly Met Glu Val Leu Ile Val
        355                 360                 365
Ser Glu Glu Thr Lys Val Pro Val Ser Thr Gly Val Thr Gly Leu Val
    370                 375                 380
Leu Thr Arg Gly Thr Ser Leu Phe Lys Gly Tyr Leu Gly Glu Asp Phe
385                 390                 395                 400
Gly His Gly Phe Ile Glu Leu Ala Gly Glu Thr Trp Tyr Val Thr Gly
                405                 410                 415
Asp Leu Gly Tyr Val Asp Arg His Gly Glu Leu Phe Leu Lys Gly Arg
            420                 425                 430
Leu Ser Arg Phe Val Lys Ile Gly Ala Glu Met Val Ser Leu Glu Ala
        435                 440                 445
Met Glu Ser Ile Ile Met Glu Gly Cys Gly Gln Asn Ala Ala Asp His
    450                 455                 460
Pro Leu Val Val Cys Gly Leu Pro Gly Glu Lys Glu Arg Leu Cys Leu
465                 470                 475                 480
Phe Thr Ile Phe Pro Thr Ser Val Ser Glu Val Asn Asp Ile Leu Lys
                485                 490                 495
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Asn Ser Lys Thr Ser Asn Leu Leu Lys Ile Ser Tyr His His Gln Val
500 505 510
Glu Ala Ile Pro Met Leu Gly Thr Gly Lys Pro Asp Tyr Cys Ser Leu
515 520 525
Asn Ala Leu Ala Lys Arg Leu Phe Ser Glu
530 535

<210>615
<211>88
<212>PRT
<213>Chlamydia trachomatis
<400>615
Leu Arg His Arg Ile Trp Gly Ser Ser Phe Ser Arg Tyr Arg Thr Gly
1 5 10 15
Ser Thr Pro Lys Leu Gly Lys Val Phe Lys Glu Ala Val Lys Ala Leu
20 25 30
Leu Arg Cys Gly Ile Phe Phe Met Pro Lys Arg Glu Val Arg Val Ser
35 40 45
Val Cys Pro Ala Asp Tyr Ser Val Leu Lys Gln Phe Pro Thr Lys Gln
50 55 60
Glu Phe Asn Thr Phe Leu Ser Asp Trp Phe Asn Gln Glu Gly Gly Glu
65 70 75 80
Thr Pro Leu Glu Val Pro Tyr Ala
85

<210>616
<211>219
<212>PRT
<213>Chlamydia trachomatis
<400>616
Ser His Asp Ile Phe Leu Ile Ile Asn Glu Lys Asn Ser Ser Phe Gln
1 5 10 15
Asn Ala Asn Leu Leu Ile Trp Ile Trp Lys Tyr Cys Thr Leu Trp Cys
20 25 30
Lys Asn Asn Phe Asn Lys Pro Arg Gly Ser Met Lys Ile Gly Phe Trp
35 40 45
Arg Arg Leu Tyr Glu Val Cys Tyr Thr Ser Leu Ile Gly Cys Ala Leu
50 55 60
Lys Leu Arg Tyr Arg Val Leu Val Glu Gly Ile Glu Ser Ile Asn Gln
65 70 75 80
Asn Ser Gln Lys Gly Ala Leu Phe Leu Ser Asn His Val Ala Glu Ile
85 90 95
Asp Pro Val Ile Leu Glu His Val Phe Trp Leu Lys Phe His Val Arg
100 105 110
Pro Ile Ala Val Asp Tyr Leu Phe Asn Asn Pro Val Val Lys Trp Phe
115 120 125
Leu Asp Ser Val Arg Ala Ile Pro Val Pro Ser Val Val Pro Gly Arg
130 135 140
Asp Asp Lys Arg Leu Leu Glu Arg Ile Glu Arg Phe Tyr Val Cys Val
145 150 155 160
Thr Gln Ala Leu Asp Arg Lys Glu Ser Leu Leu Leu Tyr Pro Ser Gly
165 170 175
Arg Leu Ser Arg Asn Gly Lys Glu Glu Ile Val Asn Gln Gln Ala Ala
180 185 190
Tyr Thr Ile Leu His Arg Ala Lys Glu Cys Asp Val Phe Leu Val Lys
195 200 205
Thr Gln Asp Leu Gly Lys Phe Phe Phe Thr Leu
210 215

<210>617
<211>354
<212>PRT
<213>Chlamydia trachomatis
<400>617

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Val Ile Val Thr Ser Leu Gln Pro Ala Glu Lys Leu Met Phe Ser Leu
  1               5                  10                  15
Leu Asn Asp Cys Gln Lys Ala Ala Glu Thr Val Val Met Gln Ala Met
             20                  25                  30
Leu Ser Leu Met Arg Tyr Arg Lys Ala His Lys Phe Ile Pro Phe Trp
         35                  40                  45
Lys Lys Pro Asp Gln Thr Tyr Val Thr Pro Ala Asp Tyr Ala Ile Gln
     50                  55                  60
Tyr Tyr Phe Tyr Gln Lys Leu Thr Ser Leu Phe Pro His Ile Pro Leu
 65                  70                  75                  80
Val Gly Glu Glu Thr Leu Asn Pro Ala Thr Asp His Pro Arg Ile Pro
                 85                  90                  95
Gln Ile Leu Gln Phe Ala Gln Gln Leu Asp Pro Lys Val Ser Cys Gln
            100                 105                 110
Asp Leu Tyr Gln Ala Leu Ser Pro Glu Ser Ser His Ser Ser Leu Phe
        115                 120                 125
Trp Leu Thr Asp Pro Ile Asp Gly Thr Ser Gly Phe Ile Lys Gln Arg
    130                 135                 140
Cys Phe Ala Ile Ala Leu Ser Leu Phe Tyr Glu His Thr Pro Val Leu
145                 150                 155                 160
Ser Val Ile Ala Cys Pro Ser Ser Lys Asn Asn Ser Phe Lys Ile Tyr
                165                 170                 175
Ser Ala Ala Lys Gly Lys Gly Leu Thr Ile Cys Asn Pro Thr His Ser
            180                 185                 190
Phe Pro Phe Ser Leu His Glu Asp Phe Gln Pro Thr Cys Lys Phe Cys
        195                 200                 205
Glu Ala Ser Leu Ser Ala Arg Asn His Gln His Leu Ala Thr His Ile
    210                 215                 220
Leu Ser Lys His Leu Pro Trp Asn Pro Gln Pro Ile Arg Ala Asp Ser
225                 230                 235                 240
Gln Cys Lys Tyr Ala Trp Val Ala Asp Asn Thr Val Asp Phe Phe Ile
                245                 250                 255
Arg Ile Pro Tyr Ser Pro Pro Arg Ala His Tyr Arg Asp His Ala Pro
            260                 265                 270
Gly Val Phe Leu Ile Glu Glu Ala Gly Gly Leu Val Thr Asp Ile Ser
        275                 280                 285
Gly Asn Pro Leu Pro Phe Ser Asn Pro Asn Leu Tyr Leu Asp Arg His
    290                 295                 300
Pro Leu Ile Leu Ala Ser Ala Asn Glu Gln Met His Ser Thr Ile Leu
305                 310                 315                 320
Glu Thr Leu Tyr Lys Leu Arg His Gln Ala Thr Gln Asn Met Leu Pro
                325                 330                 335
Leu Ala Thr His Val Ser Ala Thr Lys His Lys Gln Leu Ser Ala Leu
            340                 345                 350
Gln Leu
```

<210>618
<211>346
<212>PRT
<213>Chlamydia trachomatis
<400>618

```
Met Lys Tyr Ser Leu Gln Ile Glu Asp Leu His Ile Glu Gly Tyr Glu
  1               5                  10                  15
Gln Val Leu Lys Val Thr Cys Glu Ser Val Gln Leu Val Ala Val Ile
             20                  25                  30
Ala Ile His Gln Thr Lys Val Gly Pro Ala Leu Gly Gly Ile Arg Ala
         35                  40                  45
Phe Pro Tyr Leu Gln Phe Glu Asp Gly Leu Gln Asp Ala Leu Arg Leu
     50                  55                  60
Ser Lys Ala Met Thr Tyr Lys Ala Leu Leu Ser Ser Thr Glu Thr Gly
 65                  70                  75                  80
```

```
Gly Gly Lys Ser Val Ile Phe Leu Pro Lys Gly Met Thr Ser Pro Thr
                85                  90                  95
Glu Gly Met Leu Arg Ala Phe Gly Gln Ala Val Asn Ser Leu Gln Gly
            100                 105                 110
Lys Tyr Ile Ala Ala Glu Asp Val Gly Val Ser Val Gln Asp Val Met
        115                 120                 125
Ile Ile Arg Glu Glu Thr Pro Tyr Val Cys Gly Leu Val Thr Val Ser
    130                 135                 140
Gly Asp Pro Ser Ile Tyr Thr Ala His Gly Val Phe Leu Cys Ile Gln
145                 150                 155                 160
Glu Thr Ala Asp Tyr Leu Trp Lys Thr Asp Ile Arg Gly Lys Arg Val
                165                 170                 175
Ala Val Gln Gly Leu Gly Ala Val Gly Arg Lys Leu Val His Glu Leu
            180                 185                 190
Phe Phe Ala Gly Ala Glu Leu Ile Val Tyr Asp Thr Arg Lys Asp Leu
        195                 200                 205
Leu Asp Glu Val Val Thr Leu Tyr Gly Ala Gln Val Asp Glu Asn Ile
    210                 215                 220
Ile Ser Ser Asp Cys Asp Ile Leu Cys Pro Cys Ala Leu Gly Gly Ile
225                 230                 235                 240
Ile Asn Ser Met Ser Ile Asp Gln Leu Arg Cys Arg Ala Ile Val Gly
                245                 250                 255
Ala Thr Asn Asn Gln Leu Glu Asn Pro Ala Ile Gly Arg Glu Leu Val
            260                 265                 270
Ala Arg Gly Ile Leu Tyr Ala Pro Asp Tyr Leu Ala Asn Ala Gly Gly
        275                 280                 285
Leu Leu Asn Val Ala Gly Ser Val Gly Arg Ala Tyr Ser Pro Lys Glu
    290                 295                 300
Val Leu Ser Lys Val Glu Gly Leu Pro Lys Ile Leu Arg Lys Leu Tyr
305                 310                 315                 320
Glu Gln Gly Ala Lys Glu Asn Arg Asp Thr Gly Thr Leu Ala Asp Ala
                325                 330                 335
Ile Val Glu Glu Arg Leu Ala Val Tyr Ala
            340                 345
<210>619
<211>217
<212>PRT
<213>Chlamydia trachomatis
<400>619
Asn Thr Leu Ile Glu Ser Asp Leu Met Ser Lys Thr Pro Leu Ser Ile
  1                 5                  10                  15
Ala His Pro Trp His Gly Pro Val Leu Thr Arg Asp Asp Tyr Glu Ser
             20                  25                  30
Leu Cys Cys Tyr Ile Glu Ile Thr Pro Ala Asp Ser Val Lys Phe Glu
         35                  40                  45
Leu Asp Lys Glu Thr Gly Ile Leu Lys Val Asp Arg Pro Gln Lys Phe
     50                  55                  60
Ser Asn Phe Cys Pro Cys Leu Tyr Gly Leu Leu Pro Lys Thr Tyr Cys
 65                  70                  75                  80
Gly Asp Leu Ser Gly Glu Tyr Ser Gly Gln Gln Ser Asn Arg Glu Asn
                 85                  90                  95
Ile Lys Gly Asp Gly Asp Pro Leu Asp Ile Cys Val Leu Thr Glu Lys
            100                 105                 110
Asn Ile Thr Gln Gly Asn Ile Leu Leu Gln Ala Arg Pro Ile Gly Gly
        115                 120                 125
Ile Arg Ile Leu Asp Ser Glu Glu Ala Asp Asp Lys Ile Ile Ala Val
    130                 135                 140
Leu Glu Asp Asp Leu Val Tyr Gly Asn Ile Glu Asp Ile Ser Glu Cys
145                 150                 155                 160
Pro Gly Thr Val Leu Asp Met Ile Gln His Tyr Phe Leu Thr Tyr Lys
                165                 170                 175
```

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Ala Thr Pro Glu Ser Leu Ile Gln Ala Lys Pro Ala Lys Ile Glu Ile
180 185 190
Val Gly Leu Tyr Gly Lys Lys Glu Ala Gln Lys Val Ile Arg Leu Ala
195 200 205
His Glu Asp Tyr Cys Asn Leu Phe Met
210 215
<210>620
<211>346
<212>PRT
<213>Chlamydia trachomatis
<400>620
Ser Phe Tyr Tyr Leu Cys Ser Cys Ser Arg Lys Glu Gly Asn Ser Tyr
1 5 10 15
Val Arg Trp Asp Gln Asp Thr Leu Pro Ala Asp Ser His Arg Cys Gly
20 25 30
Val Ile Ile Gly Ser Gly Met Gly Gly Leu Arg Thr Leu Asp Glu Gly
35 40 45
Ile Glu Lys Leu Ser Ala Gly Asn Arg Lys Leu Ser Pro Phe Phe Ile
50 55 60
Pro Tyr Ile Ile Thr Asn Met Ala Pro Ala Leu Ile Ala Met Asp Tyr
65 70 75 80
Gly Leu Met Gly Pro Asn Tyr Ser Ile Ser Thr Ala Cys Ala Thr Ala
85 90 95
Asn Tyr Cys Ile Asp Ala Ala Tyr Gln His Leu Ile Glu Gly Arg Ala
100 105 110
Asp Val Ile Val Cys Gly Gly Thr Glu Ala Ala Ile Asn Arg Val Gly
115 120 125
Leu Ala Gly Phe Ile Ala Asn Arg Ala Leu Ser Glu Arg Asn Asp Ala
130 135 140
Pro Glu Gln Ala Ser Arg Pro Trp Asp Arg Asp Arg Asp Gly Phe Val
145 150 155 160
Leu Gly Glu Gly Ala Gly Ile Leu Val Leu Glu Thr Leu Asp Asn Ala
165 170 175
Leu Lys Arg Gly Ala Pro Ile Phe Ala Glu Val Leu Gly Thr Tyr Lys
180 185 190
Thr Cys Asp Ala Phe His Ile Thr Ala Pro Arg Asp Asp Gly Glu Gly
195 200 205
Ile Thr Ala Cys Ile Leu Gly Ala Leu Asn Lys Ala Gly Ile Pro Lys
210 215 220
Glu Arg Val Asn Tyr Ile Asn Ala His Gly Thr Ser Thr Pro Leu Gly
225 230 235 240
Asp Leu Ser Glu Val Leu Ala Leu Lys Lys Ala Phe Gly Ser His Val
245 250 255
Lys Asn Leu Arg Leu Asn Ser Thr Lys Ser Leu Ile Gly His Cys Leu
260 265 270
Gly Ala Ala Gly Gly Val Glu Ala Val Ala Thr Ile Gln Ala Ile Gln
275 280 285
Thr Gly Lys Leu His Pro Thr Ile Asn Val Glu Asn Pro Ile Ala Glu
290 295 300
Ile Glu Glu Phe Asp Val Val Ala Asn Lys Ala Gln Asp Trp Asp Val
305 310 315 320
Asp Val Ala Met Ser Asn Ser Phe Gly Phe Gly Gly His Asn Ser Thr
325 330 335
Ile Leu Phe Ser Arg Tyr Glu Pro Ser Leu
340 345
<210>621
<211>119
<212>PRT
<213>Chlamydia trachomatis
<400>621
Met Asp Ser Phe Cys Leu Asn Leu Leu Lys Val Ile Val Lys Ala Ile

Substitute Sheet (Rule 26)

```
  1               5                  10                  15
Asp Asn Lys Lys Gly Arg Asn Pro Val Val Leu Asp Val Gln Asn Ile
            20                  25                  30
Ser Gln Leu Thr Asp Tyr Phe Val Phe Val Glu Gly Asn Val Gly Val
        35                  40                  45
His Ile Lys Ala Ile Ala Asp Thr Ile Ile Glu Glu Leu Lys Lys Leu
    50                  55                  60
Lys Val Tyr Pro Leu Asn Val Glu Gly Leu Ser His Ser Asp Trp Val
65                  70                  75                  80
Val Ile Asp Tyr Gly Phe Ile Val Ile His Leu Phe Val Ser Ser Xaa
                85                  90                  95
Arg Glu Gln Tyr Cys Leu Glu Glu Leu Trp Lys Asp Gly Ala Ile Ile
            100                 105                 110
Thr Ser Asp Cys Leu Ala Ser
        115
<210>622
<211>584
<212>PRT
<213>Chlamydia trachomatis
<400>622
Cys Ile Ala Arg Ala Asn Phe Asp Tyr Gln Leu Phe Phe Leu Ser Arg
  1               5                  10                  15
Leu Thr Leu Thr Asn Ser Tyr His Met Asp Ile Pro Glu Gln Gly Ser
            20                  25                  30
Asn Thr Pro Glu Val Glu Gln Ala Ala Cys Cys Asn Gln Glu Ala Ala
        35                  40                  45
Glu Asn Asp Arg Ala Lys Asp Lys Leu Ser Ser Ser Glu Ile Ser Ala
    50                  55                  60
Glu Ala Val Gln Ser Cys Glu Ser Met Glu Ala Phe Glu Gln Val Val
65                  70                  75                  80
Ala Glu Arg Ser Ser Ile Glu Glu Lys Ile Leu Phe Ala Leu Glu Gln
                85                  90                  95
Met Gly Ala Leu Leu Lys Gly Ala Asp Gln Asn Ser Asp Leu Lys Leu
            100                 105                 110
Phe Trp Asn Val Arg Lys Phe Cys Leu Pro Leu Phe Gln Gln Leu Glu
        115                 120                 125
Asp Pro Val Gln Arg Ala Asn Leu Trp Gly Arg Tyr Thr Glu Leu Thr
    130                 135                 140
Arg Glu Gly Arg Tyr Ile Lys Thr Leu Gln Asp Glu Glu Gly Ala Phe
145                 150                 155                 160
Leu Val Gly Gln Ile Glu Leu Ala Ile Ser Cys Leu Glu Ser Gly Val
                165                 170                 175
Gln Gly Phe Phe Ser Lys Thr Glu Lys Glu Glu Ile Ser Glu Glu Asp
            180                 185                 190
Arg Ala Ala Leu Glu Ile Pro Ser Leu Ser Ala His Lys Asp Phe Tyr
        195                 200                 205
Leu Ser Thr His Ala Asp Leu Arg Trp Leu Gly Ser Phe Ser Ser Gln
    210                 215                 220
Ile Ile Asn Leu Arg Lys Glu Leu Met Asn Ile Ser Met Arg Met Arg
225                 230                 235                 240
Leu Lys Ser Gln Phe Phe Gln Lys Leu Ser Val Leu Gly Asn Lys Val
                245                 250                 255
Phe Pro Arg Arg Lys Glu Leu Thr Glu Lys Val Ser Glu Leu Phe Ala
            260                 265                 270
Gln Asp Val Glu Ala Phe Val Glu Arg Tyr Phe Ser Arg Ala Ser Arg
        275                 280                 285
Glu Ser Leu Lys Lys Ser Val Phe Phe Leu Arg Lys Glu Ile Lys Arg
    290                 295                 300
Leu Gln Gln Ala Ala Lys Tyr Leu Ser Ile Ser Ser Gly Val Phe Ser
305                 310                 315                 320
Ser Thr Arg Leu Gly Leu Ser Gln Cys Trp Asp Gln Leu Lys Gly Leu
```

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325 330 335
Glu Lys Glu Ile Arg Gln Glu Gln Ser Arg Leu Ala Ala Thr Ser Ala
340 345 350
Glu Asn Met Lys Glu Val Gln Gly Arg Leu Asp Gln Val Glu Val Leu
355 360 365
Leu Gln Glu Asn Glu Glu Val His Lys Ile Arg Lys Glu Ile Glu Ala
370 375 380
Ile Ser Lys His Ile Arg Gly Ile Ser Leu Val His Asp Asp Val Val
385 390 395 400
Leu Leu Lys Gly Arg Ile Gln Thr Leu Leu Gly Glu Val Arg Glu Arg
405 410 415
Glu Ala Val Ile Glu Lys Glu Met Lys Glu Leu Gln Ala Lys Ala Glu
420 425 430
Gln Ala Arg Ala Glu Ala Ile Gln Ala Leu Glu Asn Glu Val Gln Ser
435 440 445
Phe Cys Asp Gln Cys Asn Glu Gly Asp Leu Pro Glu Gly Ala Lys Glu
450 455 460
Arg Cys Gln Glu Leu Lys Glu Ala Val Lys Lys Met Ala Tyr Leu Pro
465 470 475 480
Tyr Ala Lys Lys Val Ala Leu Asp Asn Gln Ile Asn Ala Ala Gln Arg
485 490 495
Ser Val Leu Ala Arg Leu Glu Glu Gln Met Leu Ala Cys Pro Asp Glu
500 505 510
Lys Val Leu Asn Met Arg Gln Val Leu Glu Gln Arg Met Leu Arg Arg
515 520 525
Lys Glu Leu Lys Ala Lys Phe Glu Cys Asp Lys Lys Leu Leu Gly Gly
530 535 540
Ser Gly Leu Asp Phe Asp Arg Ala Leu Gln Tyr Ser Ala Met Val Glu
545 550 555 560
Glu Asp Arg Lys Ala Leu Glu Glu Leu Asp Ala Ala Ile Ile Glu Leu
565 570 575
Lys Arg Gln Ile Gln Gln Phe Val
580

<210>623
<211>372
<212>PRT
<213>Chlamydia trachomatis
<400>623
Val Leu Thr Lys Lys Thr Ile Gly Ser Gln Ser Leu Leu Trp Gln Cys
1 5 10 15
Ile Ile Val Asn Gly Phe Met Gly Ser Pro Ala Arg Thr Ser Phe Gln
20 25 30
Glu Gly Leu Arg Leu Phe Leu Tyr Ser Pro Leu Glu Glu Leu Arg Ile
35 40 45
His Ala Asp Ser Leu Arg Lys Gln Arg Tyr Pro Gln Asn Thr Ile Thr
50 55 60
Tyr Val Leu Asp Ala Asn Pro Asn Tyr Thr Asn Ile Cys Lys Ile Asp
65 70 75 80
Cys Ala Phe Cys Ala Phe Tyr Arg Lys Pro Arg Ser Ser Asp Ala Tyr
85 90 95
Leu Leu Ser Phe Asp Glu Phe Arg Gln Leu Met Gln Arg Tyr Val Gln
100 105 110
Ala Gly Ile Lys Thr Val Leu Leu Gln Gly Gly Val His Pro Gln Ile
115 120 125
Gly Ile Asp Tyr Leu Glu Thr Leu Val Ser Ile Thr Lys Lys Glu Phe
130 135 140
Pro Ser Leu His Pro His Phe Phe Ser Ala Val Glu Ile Ala His Ala
145 150 155 160
Ala Gln Ile Ser Gly Ile Ser Thr Glu Gln Ala Leu Glu Arg Leu Trp
165 170 175
Glu Ala Gly Gln Arg Thr Ile Pro Gly Gly Gly Ala Glu Ile Leu Ser

Sequence Listing

```
            180                 185                 190
Glu Arg Ile Arg Lys Gln Ile Ser Pro Lys Lys Met Gly Pro Asp Gly
        195                 200                 205
Trp Ile Gln Phe His Lys Leu Ala His Arg Leu Gly Phe Arg Ser Thr
    210                 215                 220
Ala Thr Met Met Phe Gly His Val Glu Ser Pro Glu Asp Ile Leu Leu
225                 230                 235                 240
His Leu Gln Thr Leu Arg Asp Ala Gln Asp Glu Asn Pro Gly Phe Phe
                245                 250                 255
Ser Phe Ile Pro Trp Ser Tyr Lys Pro Asn Asn Thr Ala Leu Gly Arg
            260                 265                 270
Arg Val Pro His Gln Ala Ser Pro Glu Leu Tyr Tyr Arg Ile Leu Ala
        275                 280                 285
Val Ala Arg Ile Phe Leu Asp Asn Phe Asp His Ile Ala Ala Ser Trp
    290                 295                 300
Phe Gly Glu Gly Lys Glu Glu Gly Val Lys Gly Leu Phe Tyr Gly Ala
305                 310                 315                 320
Asp Asp Phe Gly Gly Thr Ile Leu Asp Glu Ser Val His Lys Cys Thr
                325                 330                 335
Gly Trp Asp Leu Gln Ser Ser Glu Lys Glu Ile Cys Ala Met Leu Leu
            340                 345                 350
Gln Ala Gly Phe Thr Pro Val Glu Arg Asp Thr Phe Tyr Arg Pro Leu
        355                 360                 365
Ser Leu Ala Arg
    370
<210>624
<211>220
<212>PRT
<213>Chlamydia trachomatis
<400>624
Ser Pro His Ser Arg Arg Arg Asp Arg Phe Leu Phe Pro Tyr Phe Ser
  1                 5                  10                  15
Ile Arg Ser Ala Ile Trp Ala Phe Ser Arg Phe Cys Ile Ala Gly Xaa
             20                  25                  30
Leu Thr Leu Glu Ala Gln Glu Arg Gly Ile Ser Ala Leu Tyr Gln Glu
         35                  40                  45
Leu Glu Leu Leu Asp Pro Val Tyr Ala Ala Thr Ile Thr Lys His Asp
     50                  55                  60
Lys Asn Lys Ile Ile Arg Ala Leu Glu Ile Ile Arg Lys Thr Gly Ser
 65                  70                  75                  80
Lys Val Ser Ser Tyr Ala Trp Gln Ser Thr Val Asn Glu Ser Lys Glu
                 85                  90                  95
Tyr His Cys Arg Gly Trp Leu Leu Ser Pro Asp Pro Glu Leu Leu Arg
            100                 105                 110
His Asn Ile Leu Glu Arg Cys Asp Gln Met Leu Glu Glu Gly Leu Leu
        115                 120                 125
Asp Glu Val Gln Ala Leu Leu Ala Ala Gly Ile Lys Gly Asn Ser Ser
    130                 135                 140
Ala Ser Arg Ala Ile Gly Tyr Arg Glu Trp Ile Glu Phe Leu Asp Leu
145                 150                 155                 160
Gly Ser Pro Pro Asp Leu Phe Glu Ile Thr Lys Gln Lys Phe Ile Thr
                165                 170                 175
Asn Thr Trp Arg Tyr Thr Lys Lys Gln Arg Thr Trp Phe Lys Arg Tyr
            180                 185                 190
Ser Leu Phe Arg Glu Leu Arg Pro Met Gly Met Thr Leu Asp Asp Met
        195                 200                 205
Ala Lys Lys Ile Ala Gln Asp Tyr Phe Leu Cys Gly
    210                 215                 220
<210>625
<211>87
<212>PRT
```

<213>Chlamydia trachomatis
<400>625
Met Ser Ser Ser Ser Ser Ser Gly Ala Ala Thr Gly Phe Ala Val Cys
1 5 10 15
Ser Asp Pro Gln Lys Ser Phe Ser Lys Met Phe Lys Arg Thr Val Ile
20 25 30
Leu Leu Ala Gly Pro Thr Gly Ser Gly Lys Thr Ala Val Ser Leu Lys
35 40 45
Leu Ala Pro Leu Val Asp Gly Glu Ile Ile Ser Val Asp Ser Met Gln
50 55 60
Val Tyr Gln Gly Met Asp Ile Gly Thr Ala Lys Val Ser Leu Ala Asp
65 70 75 80
Arg Lys Arg Phe Arg Ile Thr
85
<210>626
<211>310
<212>PRT
<213>Chlamydia trachomatis
<400>626
Ser Asn Asp Glu Ile Leu Asp Gly Arg Ser Leu Tyr Leu Leu Ser Ser
1 5 10 15
Asn Lys Gly Phe Ser Leu Phe Phe Tyr Leu Lys Lys Gln Phe Phe Leu
20 25 30
Asp Ser Ser Arg Cys Thr Leu Glu Val Ile Leu Pro Pro Arg Ser Pro
35 40 45
Ser Phe Leu Val His Ile Trp Arg Leu Phe Phe Ala Lys Gly Pro Asn
50 55 60
Tyr Ser Leu Pro Tyr Ala Phe Leu Cys Ile Phe Val Ser Val Leu Val
65 70 75 80
Phe Leu Pro Ile Gly Leu Trp Leu Thr Leu Pro Ser Phe Leu Asn Phe
85 90 95
Lys His Ser Leu Thr Pro Ile Lys Thr Leu Phe Leu Thr Cys Thr Glu
100 105 110
Pro Pro Cys Leu Pro Glu Pro Phe Phe Ser Asp Ile Leu His Leu Ser
115 120 125
Ala Asp Ser Pro Pro Ala Leu Gln Thr Phe Ser Thr Lys Ser Ala Glu
130 135 140
His Phe Leu Asn Glu Leu Gly Val Phe Ser Phe Ile Ser Ile Glu Lys
145 150 155 160
Val Pro Asp His Lys Gly Leu Asp Ile Ser Tyr Ala Leu His Thr Pro
165 170 175
Leu Ala Phe Leu Gly Asn Gln Thr His Thr Phe Ile Gly Tyr Glu Gly
180 185 190
Gln Thr Phe Pro Ala Leu Pro Phe Phe Gln Ser Leu Glu Leu Pro Thr
195 200 205
Val Phe Phe Ser Gln Gln Ala Leu Ser Gln Thr Arg Ile Pro His Gln
210 215 220
Thr Leu Ser Ile Val Thr Ser Leu Ile Asp Gln Leu Gln Met Asp Pro
225 230 235 240
Pro Ser Ile Ile Asp Leu Ser Gln Ile Asp His Tyr Pro Gly Glu Phe
245 250 255
Val Val Ser Leu Ser Ser Gly Thr Leu Leu Arg Phe Arg Lys Asp Ser
260 265 270
Phe Leu Pro Gly Ile Gln His Tyr Gln Gln Ala Leu Ser Leu Gly Ala
275 280 285
Phe Ser Pro Gln Gln Ala Val Ile Cys Asp Leu Arg Cys Glu Asp Tyr
290 295 300
Leu Leu Leu Lys Arg Lys
305 310
<210>627
<211>96

Sequence Listing

<212>PRT
<213>Chlamydia trachomatis
<400>627

```
Leu Asp Phe Met Glu Asp Phe Ala Ala Tyr Ile Val Lys Asn Leu Val
  1               5                  10                  15
Thr Asp Pro Asn Ala Val Glu Ile Arg Ser Ser Glu Asp Lys Ala Ser
            20                  25                  30
Ala Thr Leu Lys Leu Glu Ile His Ala Ala Ser Glu Asp Ile Gly Lys
        35                  40                  45
Ile Ile Gly Arg Lys Gly Gln Thr Ile Gln Ala Leu Arg Thr Ile Leu
    50                  55                  60
Lys Arg Val Gly Ala Arg Leu Gln Lys Lys Ile Leu Val Glu Leu Ala
65                  70                  75                  80
Gln Pro Glu Asn Gly Ser Leu Thr Asp Glu Glu Val Leu Ser Leu Asp
                85                  90                  95
```

<210>628
<211>616
<212>PRT
<213>Chlamydia trachomatis
<400>628

```
Arg Arg Ser Arg Ala Ser Ser Gly Phe Phe Glu Arg Phe Ala Leu Lys
  1               5                  10                  15
Thr Gln Gln Ile Cys Trp Tyr Asn Gly Tyr Cys Pro Arg Leu Arg Ser
            20                  25                  30
Cys Leu Gln Gly His Thr Phe Gly Leu Asp Ser Ser Cys Asp Leu His
        35                  40                  45
Ile Leu Ser Tyr Tyr Gln Glu Gly Trp Arg Leu Tyr Phe Thr Ala Lys
    50                  55                  60
Tyr Gln Asp Val Val Tyr Ala Asp Ile Glu Val Gln Leu Val Gly Met
65                  70                  75                  80
His Asn Val Leu Asn Ala Ala Ala Ala Ala Met Gly Ile Ala Leu Ser Leu
                85                  90                  95
Gly Ile Asp Glu Gly Ala Ile Arg Asn Ala Phe Arg Gly Phe Ser Gly
            100                 105                 110
Val Gln Arg Arg Leu Gln Arg Lys Asn Ser Ser Glu Thr Phe Leu Phe
        115                 120                 125
Leu Glu Asp Tyr Ala His His Pro Ser Glu Ile Ser Cys Thr Leu Arg
    130                 135                 140
Ala Val Arg Thr Ala Val Gly Gln Arg Arg Ile Leu Ala Ile Cys Gln
145                 150                 155                 160
Pro His Arg Phe Ser Arg Leu Arg Glu Cys Ile Asp Ser Phe Pro Ser
                165                 170                 175
Ala Phe Lys Asp Ala Asp Glu Val Leu Leu Thr Glu Val Tyr Ser Ala
            180                 185                 190
Gly Glu Glu Ala Glu Asp Ile Ser Tyr Gln Glu Leu Ala Glu Ala Ile
        195                 200                 205
Ser Gln Glu Ser Ile Val Lys Cys Thr His Ile Pro Phe His Glu Leu
    210                 215                 220
Gln Arg His Leu Glu Gln Ser Ile Arg Val His Asp Val Cys Val Ser
225                 230                 235                 240
Leu Gly Ala Gly Asn Ile Val Asn Leu Gly Glu Lys Leu Arg Asp Phe
                245                 250                 255
Glu Pro Gln Lys Leu His Leu Gly Ile Ile Cys Gly Gly Lys Ser Cys
            260                 265                 270
Glu His Glu Ile Ser Val Leu Ser Ala Lys Asn Ile Ala Lys His Leu
        275                 280                 285
Ser Lys Ser Phe Tyr Asp Val Ser Tyr Phe Leu Ile Thr Arg Glu Gly
    290                 295                 300
Leu Trp Glu Ser Val Ser Ser Leu Glu Thr Ala Glu Asp Ser Gly Lys
305                 310                 315                 320
Ser Val Phe Asp Pro Glu Ile Ala Gln Arg Leu Glu Lys Val Asp Val
```

Sequence Listing

```
                325                 330                 335
Val Leu Pro Ile Leu His Gly Pro Tyr Gly Glu Asp Gly Ala Met Gln
            340                 345                 350
Gly Phe Leu Glu Thr Ile Gly Lys Pro Tyr Thr Gly Pro Ala Ile Ala
        355                 360                 365
Phe Ser Ala Ile Ala Met Asn Lys Val Phe Thr Lys Arg Phe Met Ser
    370                 375                 380
Asp Leu Gly Ile Pro Val Val Pro Tyr Leu Pro Leu Thr Leu Ala Gly
385                 390                 395                 400
Trp Asn Gln Glu Gln Xaa Lys Trp Leu Ala His Ile Val Glu Ala Phe
                405                 410                 415
Ser Phe Pro Met Phe Val Lys Ser Ser His Leu Gly Ser Ser Ile Gly
            420                 425                 430
Val Phe Glu Val His Asn Val Ile Glu Leu Arg Asp Ala Ile Asn Glu
        435                 440                 445
Ala Phe Met Arg Asp Asn Asp Val Phe Val Glu Glu Asn Arg Leu Gly
    450                 455                 460
Cys Lys Glu Ile Glu Val Ser Val Leu Gly Asp Gly Ser Gly Ala Phe
465                 470                 475                 480
Val Ile Ala Gly Leu His Glu Arg Arg Gly Ser Gly Gly Phe Ile Asp
                485                 490                 495
Tyr Gln Glu Lys Tyr Gly Leu Ser Gly Lys Ser Ser Ala Gln Ile Val
            500                 505                 510
Phe Asp Thr Asp Leu Ser Lys Glu Ile Gln Glu Gln Ile Leu Glu Ala
        515                 520                 525
Ala Asp Lys Ile Tyr Arg Leu Leu Leu Gly Lys Gly Ser Cys Arg Ile
    530                 535                 540
Asp Phe Phe Val Asp Glu Glu Gly Asn Phe Trp Leu Ser Glu Met Asn
545                 550                 555                 560
Pro Ile Pro Gly Met Thr Glu Thr Ser Pro Phe Leu Thr Ser Phe Ile
                565                 570                 575
Arg Lys Gly Trp Ser Tyr Glu Gln Ile Val His Gln Leu Val Ile Asp
            580                 585                 590
Gly Leu Gln Arg Phe Asn Gln Arg Gln Arg Leu Ile Ser Thr Ser Phe
        595                 600                 605
Val Asp Gln Ala Phe Ala Ile Gln
    610                 615
<210>629
<211>268
<212>PRT
<213>Chlamydia trachomatis
<400>629
Ser Asn His Cys Ile Ser Leu Phe Val Asn Leu Tyr Arg Leu Met Met
  1                 5                  10                  15
Lys Ser Leu Phe Tyr His Phe Ile Gly Ile Gly Gly Ile Gly Met Ser
             20                  25                  30
Ala Leu Ala His Val Leu Leu Asp Arg Gly Tyr Ser Val Ser Gly Ser
         35                  40                  45
Asp Leu Ser Glu Gly Lys Val Val Glu Lys Leu Lys Asn Lys Gly Ala
     50                  55                  60
Glu Phe Phe Leu Gly Asn Gln Glu Glu His Ile Pro Glu Gly Ala Val
 65                  70                  75                  80
Val Val Tyr Ser Ser Ser Ile Ser Lys Glu Asn Pro Glu Phe Leu Ser
                 85                  90                  95
Ala Lys Ser Arg Gly Asn Arg Val Val His Arg Ala Glu Leu Leu Ala
            100                 105                 110
Glu Leu Ala Gln Asp Gln Ile Ser Ile Phe Val Thr Gly Ser His Gly
        115                 120                 125
Lys Thr Thr Val Ser Ser Leu Ile Thr Ala Ile Leu Gln Glu Ala Lys
    130                 135                 140
Lys Asn Pro Ser Phe Val Ile Gly Gly Leu Asn Gln Glu Gly Ile Asn
```

145 150 155 160
Gly Gly Ser Gly Ser Glu Tyr Phe Val Ala Glu Ala Asp Glu Ser Asp
165 170 175
Gly Ser Ile Arg Cys Tyr Thr Pro Glu Phe Ser Val Ile Thr Asn Ile
180 185 190
Asp Asp Glu His Leu Ser Asn Phe Glu Gly Asp Arg Glu Leu Leu Leu
195 200 205
Ala Ser Leu Lys Asp Leu His Ser Arg Leu Ser Arg Ser Val Gly Ile
210 215 220
Met Asp Ile Val Leu Ala Cys Val His Ala Cys Lys Gly Ile Leu Leu
225 230 235 240
Asp Trp Thr Leu Leu Val Ile Tyr Ile Phe Tyr Leu Ile Ile Lys Lys
245 250 255
Asp Gly Asp Cys Thr Leu Gln Gln Ser Ile Lys Met
260 265

<210>630
<211>326
<212>PRT
<213>Chlamydia trachomatis
<400>630

Val Met Lys Lys Ile Asn Lys Ile Val Leu Ala Val Gly Gly Thr Gly
1 5 10 15
Gly His Ile Ile Pro Ala Leu Ala Ala Arg Glu Thr Phe Ile His Glu
20 25 30
Asp Ile Glu Val Leu Leu Leu Gly Lys Gly Leu Ala His Phe Leu Gly
35 40 45
Asp Asp Ser Glu Ile Ala Tyr Cys Asp Ile Pro Ser Gly Ser Pro Phe
50 55 60
Ser Leu Arg Val Asn Arg Met Phe Ser Gly Ala Lys Gln Leu Tyr Lys
65 70 75 80
Gly Tyr Val Ala Ala Leu Gln Lys Ile Arg Asp Phe Thr Pro Asp Leu
85 90 95
Ala Ile Gly Phe Gly Ser Tyr His Ser Leu Pro Ala Met Leu Ala Ser
100 105 110
Ile Arg Ser Arg Ile Pro Leu Phe Leu His Glu Gln Asn Ile Val Pro
115 120 125
Gly Lys Val Asn Lys Leu Phe Ser Arg Phe Ala Lys Gly Val Gly Met
130 135 140
Ser Phe Ala Ala Ala Gly Glu His Phe His Cys Arg Ala Glu Glu Val
145 150 155 160
Phe Leu Pro Ile Arg Lys Leu Ser Glu Gln Ile Val Phe Pro Gly Ala
165 170 175
Ser Pro Val Ile Cys Val Val Gly Gly Ser Gln Gly Ala Lys Ile Leu
180 185 190
Asn Asp Val Val Pro Lys Ala Leu Ala Arg Ile Arg Glu Ser Tyr Ser
195 200 205
Asn Leu Tyr Val His His Ile Val Gly Pro Lys Gly Asp Leu Gln Ala
210 215 220
Val Ser Gln Val Tyr Gln Asp Ala Gly Ile Asn His Thr Val Thr Ala
225 230 235 240
Phe Asp His Asn Met Leu Gly Val Leu Gln Ala Ser Asp Leu Val Ile
245 250 255
Ser Arg Ser Gly Ala Thr Met Leu Asn Glu Leu Leu Trp Val Gln Val
260 265 270
Pro Ala Ile Leu Ile Pro Tyr Pro Gly Ala Tyr Gly His Gln Glu Val
275 280 285
Asn Ala Lys Phe Phe Thr His Thr Val Gly Gly Gly Thr Met Ile Leu
290 295 300
Gln Lys Tyr Leu Thr Glu Glu Ser Leu Ser Lys Gln Val Leu Leu Cys
305 310 315 320
Phe Arg Ser Cys Asn Gln

325

<210>631
<211>390
<212>PRT
<213>Chlamydia trachomatis
<400>631

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Ile Ser Gly Ile Ile Met Lys Trp Phe Leu Ile Ser Cys Leu Leu Gly
  1               5                  10                  15
Ile Phe Ser Leu Gly Leu Ile Met Val Phe Asp Thr Ser Ser Ala Glu
             20                  25                  30
Val Leu Asp Arg Ala Leu Ser Cys Ser Thr His Lys Ala Leu Ile Arg
         35                  40                  45
Gln Ile Thr Tyr Leu Gly Leu Gly Leu Gly Ile Ala Ser Phe Val Tyr
     50                  55                  60
Ile Leu Gly Trp Lys Asp Phe Leu Lys Met Ser Pro Met Leu Leu Ile
 65                  70                  75                  80
Phe Val Gly Ile Thr Leu Val Leu Val Leu Ile Pro Gly Ile Gly Val
                 85                  90                  95
Cys Arg Asn Gly Ala Lys Arg Trp Leu Gly Val Gly Gln Leu Thr Leu
            100                 105                 110
Gln Pro Ser Glu Phe Val Lys Tyr Leu Val Pro Cys Val Ala Ile Glu
        115                 120                 125
Cys Leu Thr Thr Lys Pro Ser Ile Arg Ser Ser Phe Lys Arg Phe Val
    130                 135                 140
Ala Phe Val Ala Leu Leu Phe Ile Pro Ile Met Leu Ile Ala Ile Glu
145                 150                 155                 160
Pro Asp Asn Gly Ser Ala Ala Val Ile Ser Phe Ser Leu Ile Pro Val
                165                 170                 175
Phe Ile Val Thr Ala Val Arg Leu Arg Tyr Trp Leu Val Pro Leu Leu
            180                 185                 190
Cys Val Leu Cys Ile Gly Gly Thr Phe Ala Tyr Arg Leu Pro Tyr Val
        195                 200                 205
Arg Asn Arg Leu Gln Val Tyr Leu His Pro Glu Leu Asp Ile Lys Gly
    210                 215                 220
Arg Gly His Gln Pro Tyr Gln Ala Lys Ile Ala Ala Gly Ser Gly Gly
225                 230                 235                 240
Val Phe Gly Lys Gly Pro Gly Lys Gly Leu Gln Lys Leu Thr Tyr Leu
                245                 250                 255
Pro Glu Ala Gln Asn Asp Tyr Ile Ala Ala Ile Tyr Ala Glu Glu Phe
            260                 265                 270
Gly Phe Ile Gly Met Leu Leu Leu Ile Leu Leu Tyr Met Gly Phe Ile
        275                 280                 285
Tyr Ser Gly Tyr Val Ile Ala Met Arg Ala Ser Leu Leu Ser Gly Ala
    290                 295                 300
Ala Leu Ala Ile Ser Ile Thr Val Ile Ile Gly Met Gln Ala Phe Ile
305                 310                 315                 320
Asn Leu Gly Val Val Ser Gly Leu Leu Pro Ser Lys Gly Val Asn Leu
                325                 330                 335
Pro Phe Phe Ser Gln Gly Gly Ser Ser Leu Ile Ala Asn Met Cys Gly
            340                 345                 350
Met Gly Leu Leu Leu Arg Ile Cys Asp Glu Glu Asn Gln Gln Asn Arg
        355                 360                 365
Ile Gly Ser Gly Gly Asn Arg Arg Ala His Tyr Pro Cys Ser Ser Ser
    370                 375                 380
Lys Arg Asp Phe Tyr Ser
385                 390
```

<210>632
<211>133
<212>PRT
<213>Chlamydia trachomatis
<400>632

```
Arg Asn Arg Thr Ala Val Thr Ile Lys Thr Gly Ile Lys Glu Asn Glu
 1               5                  10                  15
Ile Thr Ala Ala Asp Pro Leu Ser Gly Ser Ile Ala Ile Asn Ile Met
            20                  25                  30
Gly Ile Asn Asn Arg Ala Thr Lys Ala Thr Asn Arg Leu Lys Leu Leu
        35                  40                  45
Arg Ile Glu Gly Phe Val Val Lys His Ser Ile Ala Thr His Gly Thr
    50                  55                  60
Lys Tyr Leu Thr Asn Ser Glu Gly Cys Lys Val Asn Cys Pro Thr Pro
65                  70                  75                  80
Ser Gln Arg Leu Ala Pro Phe Leu Gln Thr Pro Ile Pro Gly Ile Arg
                85                  90                  95
Thr Lys Thr Arg Val Ile Pro Thr Lys Ile Ser Asn Ile Gly Leu Ile
            100                 105                 110
Phe Lys Lys Ser Phe His Pro Lys Met Tyr Thr Asn Glu Ala Ile Pro
        115                 120                 125
Ser Pro Asn Pro Arg
    130
<210>633
<211>255
<212>PRT
<213>Chlamydia trachomatis
<400>633
Ala Phe Gly Trp Asp Gly Arg Gly Ser Phe Met Asn Arg Arg Asn Thr
 1               5                  10                  15
Met Ile Val Ala Thr Thr Val Asn Ala Val Leu Leu Ala Val Leu Phe
            20                  25                  30
Met Thr Ala Arg His Ser Glu Gln Glu Ile Glu Tyr Pro Gln Lys Ile
        35                  40                  45
Ala Pro Ile Lys Ile Leu Glu Pro Val Pro Val Val Asp Lys Ala Pro
    50                  55                  60
Glu Lys Leu Glu Lys Lys Pro Glu Val Ile Ala Lys Pro Ser Gln Val
65                  70                  75                  80
Val Arg Asn Pro Val Val Ser Lys Ala Glu Leu Ala Ala Gln Phe Ala
                85                  90                  95
Asp Lys Asn Pro Lys Thr Glu Lys Glu Ser Ser Gly Gly Ser Lys Lys
            100                 105                 110
Ile Ser Ser Thr Pro Val Glu Ser Thr Thr Pro Val Ala Pro Glu Ile
        115                 120                 125
Ser Val Val Asn Ala Lys Val Val Glu Lys Thr Pro Glu Lys Glu Glu
    130                 135                 140
Phe Ser Thr Val Ile Val Lys Lys Gly Asp Phe Leu Glu Arg Ile Ala
145                 150                 155                 160
Arg Ser Asn His Thr Thr Val Ser Ala Leu Met Gln Leu Asn Asp Leu
                165                 170                 175
Ser Ser Thr Gln Leu Gln Ile Gly Gln Val Leu Arg Val Pro Lys Thr
            180                 185                 190
Asn Lys Thr Glu Lys Asp Leu Gln Val Lys Thr Pro Asn Pro Glu Asp
        195                 200                 205
Tyr Tyr Val Val Lys Glu Gly Asp Ser Pro Trp Ala Ile Ala Leu Ser
    210                 215                 220
Asn Gly Ile Arg Leu Asp Glu Leu Leu Lys Leu Asn Gly Leu Asp Glu
225                 230                 235                 240
Gln Lys Ala Arg Arg Leu Arg Pro Gly Asp Arg Leu Arg Ile Arg
                245                 250                 255
<210>634
<211>179
<212>PRT
<213>Chlamydia trachomatis
<400>634
Asn His Trp Tyr Leu His Asp Lys Tyr Asn Tyr Cys Cys Ala Tyr Leu
```

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```
  1               5                  10                  15
Leu Ala Lys Ile Glu Phe Pro Ile Ser Glu Thr Ser Phe Ile Glu Ala
             20                  25                  30
Val Ala Thr Phe Asn Lys Pro Pro His Arg Met Glu Tyr Leu Gly Gln
         35                  40                  45
Lys Gln Gly Ile His Tyr Ile Asn Asp Ser Lys Ala Thr Thr Val Ser
     50                  55                  60
Ala Thr Glu Thr Ala Leu Leu Gly Val Gly Asn Gln Ala Ile Val Ile
 65                  70                  75                  80
Leu Gly Gly Arg Asn Lys Gly Cys Thr Phe Ser Ser Leu Leu Pro Ala
                 85                  90                  95
Leu Arg Lys Ala Ala Lys Ser Val Val Ala Met Gly Glu Cys Ala Gln
            100                 105                 110
Glu Ile Ala Arg Asp Leu Glu Glu Phe Pro Val Thr Val Val Lys Asn
        115                 120                 125
Leu Ser Glu Ala Leu Leu Cys Ala Glu Glu Gln Ala Val Pro Gly Asp
    130                 135                 140
Val Ile Val Leu Ser Pro Ala Cys Ala Ser Phe Asp Gln Phe Arg Ser
145                 150                 155                 160
Tyr Glu Glu Arg Gly Ala Met Phe Lys His Leu Val Gly Met Glu Glu
                165                 170                 175
Val Leu Leu
```

<210>635
<211>242
<212>PRT
<213>Chlamydia trachomatis

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<400>635
Met Gly Leu Glu Arg Val Val Val Ile Gly Leu Gly Val Ser Gly Arg
  1               5                  10                  15
Ser Ile Val Xaa Phe Leu Ala Gln Lys Gly Val Cys Val Leu Gly Val
             20                  25                  30
Asp Lys Ser Leu His Ala Leu Gln Asn Cys Pro Tyr Ile Xaa Lys Asn
         35                  40                  45
Ile Trp Arg Thr Lys Ser Ser Leu His Arg Trp Ile Met Leu Ser Ser
     50                  55                  60
Pro Gly Val Ser Lys Glu His Pro Trp Val Gln Ala Ala Ile Ala Ser
 65                  70                  75                  80
His Ile Pro Val Met Thr Asp Ile Gln Leu Ala Phe Gln Thr Glu Lys
                 85                  90                  95
Phe Thr Glu Arg Glu Ser Leu Ala Ile Thr Gly Thr Thr Gly Lys Thr
            100                 105                 110
Thr Thr Ile Leu Phe Leu Glu Tyr Leu Phe Lys Arg Ser Gly Ile Pro
        115                 120                 125
Ala Phe Ala Met Gly Asn Val Gly Ile Pro Ile Leu Asp Gly Met Gln
    130                 135                 140
Asn Pro Gly Val Arg Ile Val Glu Ile Ser Ser Phe Gln Leu Ala Asp
145                 150                 155                 160
Gln Glu Lys Ser Tyr Pro Val Leu Ser Gly Gly Met Ile Leu Asn Ile
                165                 170                 175
Ser Asp Asn His Leu Asp Tyr His Gly Asn Phe Ser Glu Tyr Phe Gln
            180                 185                 190
Ala Lys Gln Asn Leu Ala Leu Cys Met Arg Asn Pro Asp Asp Leu Trp
        195                 200                 205
Val Gly Asp Glu Arg Phe Tyr Gly His Leu Tyr Leu Glu Glu Val Gln
    210                 215                 220
Lys Tyr Met Arg Leu Leu Asp Lys Glu Ser Ala Leu Lys Pro Leu Val
225                 230                 235                 240
Leu Ala
```

<210>636

<211>351
<212>PRT
<213>Chlamydia trachomatis
<400>636
Arg Glu Phe Leu Ile Arg Ala Ser His Asn Lys Thr Arg Lys Gln Met
1 5 10 15
Leu Pro Leu Thr Tyr Val Val Lys Ala Phe Ser Ile Gly Leu Phe Phe
20 25 30
Ser Leu Phe Leu Met Lys Pro Leu Ile Ser Trp Leu Lys Lys Gln Gly
35 40 45
Phe Gln Asp His Ile His Lys Asp His Cys Glu Lys Leu Glu Glu Leu
50 55 60
His Lys Asp Lys Ala Tyr Ile Pro Thr Ala Gly Gly Ile Val Phe Val
65 70 75 80
Phe Ala Ser Val Leu Ala Val Leu Leu Leu Phe Pro Ile Gln Leu Trp
85 90 95
Ser Thr Trp Phe Cys Ile Gly Thr Ile Leu Leu Trp Gly Ala Leu Gly
100 105 110
Trp Cys Asp Asp Gln Ile Lys Asn Arg Arg Arg Val Gly His Gly Leu
115 120 125
Ser Ala Lys His Lys Phe Leu Ile Gln Asn Cys Leu Ala Ala Gly Val
130 135 140
Val Leu Pro Ile Met Phe Ala Tyr Lys Glu Ser Phe Leu Ser Phe His
145 150 155 160
Leu Pro Phe Leu Gly Ile Val Ser Leu Pro His His Trp Trp Ser Tyr
165 170 175
Leu Leu Ser Phe Ala Ile Ala Thr Leu Ala Ile Val Gly Thr Ser Asn
180 185 190
Ser Val Asn Leu Thr Asp Gly Leu Asp Gly Leu Ala Ala Gly Ala Met
195 200 205
Val Ile Ala Cys Leu Gly Met Leu Val Val Ala Cys Thr Asn Gly Ala
210 215 220
Pro Trp Ala Phe Ile Cys Cys Val Leu Leu Ala Thr Leu Ala Gly Ser
225 230 235 240
Cys Leu Gly Phe Leu Arg Tyr Asn Lys Ser Pro Ala Arg Val Phe Met
245 250 255
Gly Asp Thr Gly Ser Leu Phe Leu Gly Ala Met Leu Gly Met Cys Ala
260 265 270
Val Leu Leu Arg Ala Glu Phe Leu Leu Leu Phe Met Gly Gly Ile Phe
275 280 285
Val Leu Glu Ser Leu Ser Val Ile Val Gln Val Gly Ser Tyr Lys Leu
290 295 300
Arg Lys Lys Arg Val Phe Leu Cys Ala Pro Leu His His His Tyr Glu
305 310 315 320
Tyr Lys Gly Leu Ser Glu Lys Ala Val Val Arg Asn Phe Leu Ile Val
325 330 335
Glu Leu Ile Cys Val Val Val Gly Ile Ile Ala Val Phe Val Asp
340 345 350
<210>637
<211>203
<212>PRT
<213>Chlamydia trachomatis
<400>637
Asn Gly Arg Phe Leu Leu Ser Ser Asp Ser Phe Arg Arg Val Leu Ile
1 5 10 15
Ser Ala Pro Asp Gly Asp Ile Glu Leu Pro Ala Val Phe Pro Tyr Ser
20 25 30
Pro Ala Tyr Met Asn Phe Ile Ile Ala Val Ala Leu Ala Trp Ile Thr
35 40 45
Asn Val Pro Met Asp Arg Leu Glu Gln Val Ser Gln Ser Leu Phe Leu
50 55 60

Pro Ala Met Arg Phe Glu Gln Gln Glu His Asn Gly Ile Arg Val Ile
65 70 75 80
Asn Asp Ala Tyr Asn Ala Ser Pro Asp Ala Met Leu Ala Ala Leu Asp
85 90 95
Ala Val Pro Val Pro Pro Glu Gly Gly Lys Ile Ile Phe Ile Leu Gly
100 105 110
His Met Ala Glu Leu Gly Arg Tyr Ser Asp Glu Cys His Ile Ala Val
115 120 125
Ala Arg Lys Ala Val Thr Lys Ala His Ile Ile Phe Phe Val Gly Glu
130 135 140
Lys Trp Phe Pro Val Arg Asp Ile Val Arg Asp Ala Asp Cys Gln Ile
145 150 155 160
Gly Phe Tyr Ser Ala Val Ser Glu Ile Met Asp Thr Val Lys Ala Leu
165 170 175
Val Gln Gln Gly Asp Val Val Leu Leu Lys Gly Ser Arg Ser Leu Glu
180 185 190
Leu Glu Thr Leu Leu Pro Cys Phe Ser Ile Ser
195 200

<210>638
<211>282
<212>PRT
<213>Chlamydia trachomatis
<400>638
Met Arg Pro Ile Leu Leu Glu Glu Trp Ser Ser Leu Leu Leu Gly Met
1 5 10 15
Glu Ile Pro Arg Ser Gly Lys Lys Val Thr Gly Val Ala Ile Asp Ser
20 25 30
Arg Leu Val Leu Pro Gly Asp Val Phe Phe Ala Leu Pro Gly Asn Arg
35 40 45
Thr Ser Gly His Leu Phe Leu Lys Gln Ala Ala Gln Ser Gly Ala Val
50 55 60
Ala Ala Val Val Ala Ser Asp Tyr His Gly Pro Ser Tyr Gly Leu Gln
65 70 75 80
Leu Leu Arg Val Ala Asp Pro Arg Glu Ala Leu Arg Ala Ala Gly Arg
85 90 95
Thr Gln Gly Ala Leu Phe His Gly Glu Val Ile Gly Ile Thr Gly Ser
100 105 110
Val Gly Lys Thr Thr Thr Lys Asn Phe Ala Asn Gln Leu Leu Ser Ser
115 120 125
Val Tyr Lys Val Phe Met Ser Pro Lys Ser Tyr Asn Ser Gln Leu Thr
130 135 140
Leu Pro Leu Ser Val Leu Met Ala Asp Gly Asp Glu Asp Phe Leu Leu
145 150 155 160
Leu Glu Met Gly Val Ser Glu Pro Asn Asn Met Lys Asn Leu Leu Glu
165 170 175
Ile Ile Glu Pro Thr Ile Gly Val Ile Thr His Ile Asp Val Gln His
180 185 190
Ala Met His Phe Leu Asp Lys Gly Ala Gln Gly Ile Val Glu Glu Lys
195 200 205
Ser Leu Leu Leu Glu Arg Cys Gly Leu Gln Leu Ile Pro Lys Asp Ser
210 215 220
Ser Trp Phe Gln Phe Phe Ala Lys Lys Asn Ser Ala Ala Glu Arg Phe
225 230 235 240
Ser Phe Ser Met Ser Asn Glu Thr Ala Asp Phe Tyr Tyr Arg Ala Ile
245 250 255
His Ser Glu Glu Ser Leu Leu Val Leu Leu Met Gly Thr Leu Ser Cys
260 265 270
Leu Pro Tyr Phe Arg Ile Leu Gln Arg Ile
275 280

<210>639
<211>440

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<212>PRT
<213>Chlamydia trachomatis
<400>639

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Pro Leu Gln Glu Tyr Pro Ala Met Pro His Asp Asn Asn Glu Met His
  1               5                  10                  15
Arg Asn Thr Ile His Gln Leu Phe Thr Gly Leu Asp Lys Ala Tyr Gln
             20                  25                  30
Ile Val Lys Gly Phe Tyr Gly Pro Ala Tyr Ser Ser Ser Ser Lys Asp
         35                  40                  45
Phe Phe Lys Gly Arg Gly Tyr His Ile Leu Ser Arg Ile Glu Leu Ser
     50                  55                  60
Asp Pro Phe Glu Arg Ile Gly Val Tyr Phe Ala Arg Ser Leu Ala Lys
 65                  70                  75                  80
Arg Ile His Lys Arg His Ala Asp Gly Val Ile Ser Ser Val Ile Leu
                 85                  90                  95
Leu Arg Ala Phe Leu Lys Ala Ser Ile Pro Phe Ile Asp Gln Gly Leu
            100                 105                 110
Ser Pro Arg Leu Leu Ala Ser Ala Leu Ala Ser Gln Lys Glu Ala Val
        115                 120                 125
Cys Ala Tyr Leu His Ser His Ser Phe Leu Leu Lys Asp Ala Ser Lys
    130                 135                 140
Val Leu Gly Leu Ile Arg Ser His Leu Pro Asp Pro Leu Ile Gly Glu
145                 150                 155                 160
Ala Phe Ala Glu Ala Val Ala Tyr Thr Gly His Glu Gly Ala Val Ala
                165                 170                 175
Leu Ser Gln Arg Ser Gly Ser Thr Leu His Leu Val Lys Gly Ile Gln
            180                 185                 190
Thr Gln Lys Gly Tyr Arg Met Pro Ser Phe Phe Pro His Asp Ser Phe
        195                 200                 205
His Glu Asn Pro Ile Val Ala Pro Lys Ile Phe Val Thr Asp Gln Lys
    210                 215                 220
Ile His Cys Leu Phe Pro Phe Leu Pro Leu Leu Lys Lys Phe Ser Glu
225                 230                 235                 240
Glu Gln Thr Pro Leu Ile Ile Phe Cys Lys Glu Ile Ala Pro Asp Pro
                245                 250                 255
Leu Ala Thr Cys Ile Ala Asn Arg Ile Ala Gly Leu Leu Asp Val Leu
            260                 265                 270
Val Val Thr Ile Pro Asp Thr Thr Leu Leu Glu Asp Ile Ala Leu Leu
        275                 280                 285
Thr Gly Thr Thr Val Phe Ser Ser Pro Pro Phe Ser Asn Lys Pro Pro
    290                 295                 300
Ile Glu Leu Pro Leu Leu Gly Ser Cys Thr Trp Ala Glu Leu Ser Arg
305                 310                 315                 320
Asp His Thr Leu Leu Val Cys Glu Asn Leu Val Pro Glu Val Val Lys
                325                 330                 335
Leu Lys Val Arg Gln Leu Asp His Ala Ile His Asn Ser Glu Asp Glu
            340                 345                 350
Thr Ser Arg Lys Leu Leu Lys Lys Arg Lys His Arg Leu Glu Asn Ser
        355                 360                 365
Ile Ala Ile Ile Pro Val Lys Gln Asp Thr Ala Pro Leu His Glu Leu
    370                 375                 380
Ala Leu Lys Thr Leu Asn Ser Thr Gln Glu Ser Gly Phe Val Leu Gly
385                 390                 395                 400
Gly Gly Gly Leu Phe Phe Thr Leu Leu Arg Ala Ser Leu Pro Leu Gln
                405                 410                 415
Ser Ile Leu Lys Lys Asn Lys Leu Leu Phe Arg Phe Tyr Arg Pro Val
            420                 425                 430
Pro His Ser Leu Gly Thr Thr Gly
        435                 440
```

<210>640
<211>129

<212>PRT
<213>Chlamydia trachomatis
<400>640

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Thr Gln His Lys Asn Leu Val Ser Ser Trp Glu Ala Glu Gly Ser Ser
  1               5                  10                  15
Leu Arg Tyr Ser Glu Pro Leu Phe Leu Phe Arg Ala Phe Ser Arg Arg
             20                  25                  30
Thr Ser Cys Cys Ser Asp Phe Thr Asp Pro Cys Arg Thr Leu Leu Glu
         35                  40                  45
Gln Leu Val Asn Ser Val Tyr Met Asp Gly Lys Leu Val Ala Asp Lys
     50                  55                  60
Leu Cys Ser Leu Gly Thr Pro Ser Leu Gly Phe Asn Val Val Ser Gln
 65                  70                  75                  80
Gln Ile Glu Asp Met Ile Ser Ala Gly Ile Ile Ala Pro Leu Asn Ala
                 85                  90                  95
Val Leu Asp Ile Phe Ser Cys Ser Leu His Thr Ala Val Asp Leu Leu
            100                 105                 110
Leu Ala Ser Phe Thr Thr Pro Pro Thr Pro Ala Ala Lys Glu Lys Lys
        115                 120                 125
Thr
```

<210>641
<211>300
<212>PRT
<213>Chlamydia trachomatis
<400>641

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Ile Gly Phe Ser Ile Asn His Arg Phe Ser Met Pro Asn Lys Pro Ser
  1               5                  10                  15
His Ala Phe Arg Leu Ile His Cys Ser Asp Ile His Phe Cys Val Leu
             20                  25                  30
Pro Lys Asn Pro Phe Gln Cys Phe Asn Lys Arg Phe Lys Gly Leu Leu
         35                  40                  45
Arg Gln Leu Ile Gly Gly Val Ser Phe Gln Ala Phe Ala Ile Ser Gln
     50                  55                  60
Arg Phe Pro Gln Leu Val Lys Gln Leu Glu Ala Asp Ser Val Cys Val
 65                  70                  75                  80
Thr Gly Asp Met Thr Ile Thr Ala Leu Asp Thr Glu Phe Arg Phe Ala
                 85                  90                  95
Lys Glu Phe Leu Ser Arg Val Glu Ser Val Ala Pro Val Tyr Ile Val
            100                 105                 110
Pro Gly Asn His Asp Val Xaa Thr His Arg Ala Leu Lys Lys Gln Thr
        115                 120                 125
Phe Tyr Ser Tyr Phe Pro Asn Lys Glu Leu Gln Thr His Arg Ile Ala
    130                 135                 140
Phe Lys Lys Leu Thr Pro Thr Trp Trp Leu Val Leu Leu Asp Cys Ser
145                 150                 155                 160
Cys Phe Asn Gly Trp Tyr Thr Ala Asn Gly Glu Val Thr Asp Ser Gln
                165                 170                 175
Leu Leu Ala Leu Glu Gln Phe Leu Ser Ser Leu Pro Ala Ser Glu His
            180                 185                 190
Val Ile Val Ala Asn His Tyr Pro Leu Ser Pro Thr Thr Arg Pro Ala
        195                 200                 205
His Asp Leu Leu Asn Tyr Ala Pro Leu Lys Ser Leu Leu Met Asn Ser
    210                 215                 220
Pro Ser Val Arg Leu Tyr Leu His Gly His Asp His Tyr Val Glu Leu
225                 230                 235                 240
Asp His Leu Pro Pro Leu Val Val Asn Ser Gly Ser Leu Thr Leu Pro
                245                 250                 255
Ser Asn Ala Arg Phe His Ile Ile Asp Leu His Pro Glu Gly Gly Tyr
            260                 265                 270
Gln Ile Ala Thr Ala Ala Leu Thr Asn Leu Lys Glu Thr Ser Thr Pro
```

```
        275                 280                 285
Leu Thr Ile Ser Ile Glu Glu Asn Thr Ile Ser Leu
    290                 295                 300
<210>642
<211>101
<212>PRT
<213>Chlamydia trachomatis
<400>642
Pro Phe Leu Ser Lys Lys Ile Pro Ser Leu Tyr Lys Ser Ser Ala Leu
  1               5                  10                  15
Asn Leu Arg Ile Thr Asn Leu Glu Gly Leu Pro Met Lys Glu Lys Lys
            20                  25                  30
Val Leu Glu Leu Ser Pro Glu Ala Thr Leu Leu Lys Lys Leu Arg Asp
        35                  40                  45
Arg Ala Ile Ser Gln Gln Glu Thr Gln Lys Arg Lys Ala Trp Val Glu
    50                  55                  60
Lys Leu Ala Ala Met Pro Glu Ser Thr Arg Asp Tyr Leu Glu Pro Gln
65                  70                  75                  80
Ala His Leu Glu Pro Ser Gln Leu Phe Arg Lys Val Ala Glu Arg Leu
                85                  90                  95
Leu Glu Glu Gly Ala
            100
<210>643
<211>190
<212>PRT
<213>Chlamydia trachomatis
<400>643
Met Val Arg Val Ser Thr Ser Glu Phe Arg Val Gly Leu Arg Val Glu
  1               5                  10                  15
Ile Asp Gly Gln Pro Tyr Val Ile Leu Gln Asn Asp Phe Val Lys Pro
            20                  25                  30
Gly Lys Gly Gln Ala Phe Asn Arg Ile Lys Val Lys Asn Phe Leu Thr
        35                  40                  45
Gly Arg Val Ile Glu Lys Thr Phe Lys Ser Gly Glu Ser Ile Glu Thr
    50                  55                  60
Ala Asp Val Arg Glu Gln Gln Met Arg Leu Leu Tyr Thr Asp Gln Glu
65                  70                  75                  80
Gly Ala Thr Phe Met Asp Asp Glu Thr Phe Glu Gln Glu Leu Ile Phe
                85                  90                  95
Trp Asp Lys Leu Glu Asn Val Arg Gln Trp Leu Leu Glu Asp Thr Ile
            100                 105                 110
Tyr Thr Leu Val Leu Tyr Asn Gly Asp Val Ile Ser Val Glu Pro Pro
        115                 120                 125
Ile Phe Met Glu Leu Thr Ile Ala Glu Thr Ala Pro Gly Val Arg Gly
    130                 135                 140
Asp Thr Ala Ser Gly Arg Val Leu Lys Pro Ala Thr Thr Asn Thr Gly
145                 150                 155                 160
Ala Lys Ile Met Val Pro Ile Phe Ile Glu Glu Gly Glu Val Val Lys
                165                 170                 175
Val Asp Thr Arg Thr Gly Ser Tyr Glu Ser Arg Val Ser Lys
            180                 185                 190
<210>644
<211>290
<212>PRT
<213>Chlamydia trachomatis
<400>644
Phe Met Thr His Gln His Lys Lys Ile Ser Glu Glu Thr Ile Ala Cys
  1               5                  10                  15
Asp Met Leu Glu Arg Tyr Thr Gly Ser Thr Ile Gln Glu Phe Gln Pro
            20                  25                  30
Tyr Leu Leu Leu Thr Asn Phe Gly Tyr Tyr Val Asp Val Phe Ala Glu
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          35                  40                  45
Ile Tyr Gln Val Pro Val Ser Arg Gly Ser Met Phe Ser Ala Ala His
      50                  55                  60
Ala Pro Gln Ile His Thr Ser Ile Ile Asp Phe Lys Leu Gly Ser Pro
 65                  70                  75                  80
Gly Ala Ala Leu Thr Val Asp Leu Cys Ser Phe Leu Pro Asn Ala Thr
                 85                  90                  95
Ala Ala Ile Met Leu Gly Met Cys Gly Gly Leu Arg Ser His Tyr Gln
            100                 105                 110
Ile Gly Asp Tyr Phe Val Pro Val Ala Ser Ile Arg Lys Asp Gly Thr
        115                 120                 125
Ser Asp Ala Tyr Phe Pro Pro Glu Val Pro Ala Leu Ala Asn Phe Val
    130                 135                 140
Val Gln Lys Met Ile Thr Asn Ile Leu Glu Ala Lys Asn Leu Pro Tyr
145                 150                 155                 160
His Ile Gly Ile Thr His Thr Thr Asn Ile Arg Phe Trp Glu Phe Asn
                165                 170                 175
Lys Glu Phe Arg Arg Lys Leu Tyr Glu Asn Lys Ala Gln Thr Val Glu
            180                 185                 190
Met Glu Cys Ala Thr Leu Phe Ala Ala Gly Tyr Arg Arg Asn Leu Pro
        195                 200                 205
Leu Gly Ala Leu Leu Leu Ile Ser Asp Leu Pro Leu Arg Lys Asp Gly
    210                 215                 220
Ile Lys Thr Lys Glu Ser Ser Ser Ala Val Leu Asn Ser His Thr Lys
225                 230                 235                 240
Glu His Ile Leu Thr Gly Val Glu Val Phe Ala Ser Leu Gln Lys Lys
                245                 250                 255
Ser Gly Pro Gly Ile Lys Lys Thr Lys Gly Leu Pro His Met Glu Phe
            260                 265                 270
Gly Gln Ala Asp Asp Ser Leu Ser Glu Gln Thr Gly Val Ser Asp Gly
        275                 280                 285
Asp Phe
    290
<210>645
<211>201
<212>PRT
<213>Chlamydia trachomatis
<400>645
Phe Asp Phe Cys Trp Arg Gly Trp Thr Tyr Thr Ser Ala Tyr Arg Ala
  1                 5                  10                  15
Asn His Val Ala Ala Gly Tyr Ser Arg Ala Lys Ser Asp Ser Ser Ala
             20                  25                  30
Asp Ala Asn Glu Val Lys Gly Ala Trp Leu Ala Ala Leu Glu Ser Ala
         35                  40                  45
Gly Pro Thr Ala Leu Ile Leu Ser Arg Gln Asn Leu Pro Thr Leu Lys
     50                  55                  60
Glu Thr Lys Arg Ser Phe Arg Glu Gly Val Arg Lys Gly Ala Tyr Ile
 65                  70                  75                  80
Leu Val Lys Glu Glu Gly Asp Arg Pro Asp Tyr Thr Leu Cys Ala Ser
                 85                  90                  95
Gly Ser Glu Val His Leu Ala Ile Glu Val Ala Gln Ser Leu Met Ala
            100                 105                 110
Leu Asp Lys Arg Val Arg Val Ile Ser Phe Pro Cys Trp Glu Leu Phe
        115                 120                 125
Glu Arg Gln Asp Val Glu Tyr Arg Glu Ser Val Ile Gly Gly Asp Leu
    130                 135                 140
Gly Leu Arg Val Ser Ile Glu Ala Gly Thr Ala Leu Gly Trp Tyr Lys
145                 150                 155                 160
Tyr Ile Gly Ser Asn Gly Leu Ala Ile Ala Met Asp Gly Phe Gly Met
                165                 170                 175
Ser Gly Ala Pro Asn Glu Val Ala Glu Thr Cys Gly Phe Thr Val Asp
```

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            180                 185                 190
Asn Ile Val Gln Arg Ile Leu Ser Val
        195                 200
<210>646
<211>221
<212>PRT
<213>Chlamydia trachomatis
<400>646
Lys Phe Leu Ala Ser Pro Arg Arg Lys Val Phe Arg Ser Ser Ala Val
  1               5                  10                  15
Lys Met Phe Phe Ala Ala Lys Gln Gln Glu Gly Lys Lys Leu Gln Glu
             20                  25                  30
Glu Trp Gln Glu Arg Phe Arg Val Trp Ser Lys Gln Ala Pro Glu Gln
         35                  40                  45
His Gln Glu Tyr Leu Arg Leu Ile Gln Glu Ile Ser Ile Gln Glu Leu
     50                  55                  60
Glu Glu Ile Leu Asn Leu Ile Asp Met Pro Glu Ser Ile Ala Gly Arg
 65                  70                  75                  80
Ala Ala Ser Asn Lys Val Ile Gln Val Leu Ala Glu Asp Ile Pro Ser
                 85                  90                  95
Leu Val Gly Gly Ser Ala Asp Leu Ser Ser Ser Asp Gly Thr Trp Ile
            100                 105                 110
Ala Lys Glu Gly Thr Ile Ser Ala Ser Asp Phe Leu Gly Arg Asn Ile
        115                 120                 125
Arg Tyr Gly Val Arg Glu Phe Gly Met Gly Thr Ile Met Asn Gly Leu
    130                 135                 140
Ala Tyr Ser Gln Val Phe Arg Pro Phe Gly Gly Thr Phe Leu Val Phe
145                 150                 155                 160
Ser Asp Tyr Leu Arg Ser Ala Ile Arg Leu Ala Ala Leu Ser Lys Leu
                165                 170                 175
Pro Val Ile Tyr Gln Phe Thr His Asp Ser Ile Phe Val Gly Glu Asp
            180                 185                 190
Gly Pro Thr His Gln Pro Ile Glu Gln Ile Met Ser Leu Arg Ala Ile
        195                 200                 205
Pro Gly Leu Arg Val Ile Arg Leu Arg Met Arg Met Lys
    210                 215                 220
<210>647
<211>295
<212>PRT
<213>Chlamydia trachomatis
<400>647
Met Ala Gly Asn Ser Asp Leu Asp Ile Asp Ile Leu Glu Lys Ile Ala
  1               5                  10                  15
Gly Thr Ile Lys Gln Leu Ser Ile Glu Ser Ile Gln Lys Ala Ser Ser
             20                  25                  30
Gly His Pro Gly Met Pro Leu Gly Cys Ala Glu Leu Ala Ala Tyr Leu
         35                  40                  45
Tyr Gly Tyr Val Leu Arg Tyr Asn Ser Lys Asp Ser Arg Trp Val Asn
     50                  55                  60
Arg Asp Arg Phe Val Leu Ser Ala Gly His Gly Ser Ala Leu Leu Tyr
 65                  70                  75                  80
Ser Cys Leu His Leu Ala Gly Phe Asp Val Asn Leu Glu Asp Leu Gln
                 85                  90                  95
Gln Phe Arg Gln Leu Gln Ser Arg Thr Pro Gly His Pro Glu Phe Arg
            100                 105                 110
Glu Thr Asp Gly Val Glu Ala Thr Thr Gly Pro Leu Gly Gln Gly Val
        115                 120                 125
Gly Asn Ala Val Gly Met Ala Leu Ser Leu Lys Met Leu Gly Ala Arg
    130                 135                 140
Phe Asn Gln Pro Ala Asn Ser Ile Phe Asp Ala Lys Val Tyr Cys Leu
145                 150                 155                 160
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Ala Gly Asp Gly Cys Phe Met Glu Gly Val Ser His Glu Ala Cys Ser
165 170 175
Phe Ala Gly Ser Leu Gly Leu Asp Asn Leu Val Leu Ile Tyr Asp Tyr
180 185 190
Asn Glu Ile Ile Leu Asp Gly Thr Leu His Asp Val Ser Ile Glu Asp
195 200 205
Thr Lys Gln Arg Phe Leu Ala Tyr Gly Trp Asp Val Phe Glu Thr Asp
210 215 220
Gly His Asp Phe Glu Ser Leu His Gln Val Phe Thr Gln Ile Lys Lys
225 230 235 240
Ser Gln Cys Lys Pro Thr Leu Ile Ile Ala His Thr Ile Ile Gly His
245 250 255
Gly Ser Pro Lys Glu Gly Thr Asn Lys Ala His Gly Ser Pro Leu Gly
260 265 270
Glu Asp Gly Val Ala Gln Thr Lys Ser Phe Trp His Leu Pro Glu Glu
275 280 285
Lys Phe Phe Val Leu Arg Gln
290 295

<210>648
<211>199
<212>PRT
<213>Chlamydia trachomatis
<400>648
Met Ser Asp Pro Leu Val Tyr Ser Phe Leu Lys Pro Arg Ala Ser Ser
1 5 10 15
Leu Gln Lys Val Pro Thr Lys Leu Cys Ser Leu Lys Leu Val Asp Ser
20 25 30
Val Phe Gly Gln Ile Phe Leu Tyr Cys Cys Glu Leu Lys Asn Gly Leu
35 40 45
Pro Met Leu Ser Asn Thr Leu Arg Ser Asn Phe Leu Lys Phe Tyr Ala
50 55 60
Asn Arg Asn His Thr Pro Val Ala Ser Ser Pro Val Phe Pro His Asn
65 70 75 80
Asp Pro Ser Ile Leu Phe Thr Asn Ala Gly Met Asn Gln Phe Lys Asn
85 90 95
Ile Phe Leu Gly Lys Glu Gln Thr Ser Tyr Thr Arg Ala Thr Thr Ser
100 105 110
Gln Lys Cys Ile Arg Ala Gly Gly Lys His Asn Asp Leu Glu Asn Val
115 120 125
Gly His Thr Ser Arg His Leu Thr Phe Phe Glu Met Leu Gly Asn Phe
130 135 140
Ser Phe Gly Asp Tyr Phe Lys Gln Asp Ala Ile Ser Phe Ala Trp Glu
145 150 155 160
Val Ser Leu Ser Val Phe Asn Phe Asp Pro Asp Phe Ile Tyr Ala Thr
165 170 175
Val His Glu Lys Asp Asp Glu Xaa Ser Leu Phe Gly Lys Asn Ile Phe
180 185 190
Arg Gln Thr Glu Phe Phe Val
195

<210>649
<211>724
<212>PRT
<213>Chlamydia trachomatis
<400>649
Xaa Phe Ala Leu Trp Glu Lys Tyr Leu Pro Thr Asp Arg Ile Phe Arg
1 5 10 15
Leu Thr Asp Lys Asp Asn Phe Trp Ser Met Ala Asp Thr Gly Pro Cys
20 25 30
Gly Phe Cys Ser Glu Leu Leu Phe Asp Arg Gly Glu Lys Phe Gly Lys
35 40 45
Ala Ala Ser Pro Leu Glu Asp Val Asp Gly Glu Arg Phe Leu Glu Tyr

Applicant's Copy

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     50                  55                  60
Trp Asn Leu Val Phe Met Glu Phe Asn Arg Thr Ser Asp Gly Thr Leu
 65                  70                  75                  80
Leu Ala Leu Gln Lys Lys Cys Val Asp Thr Gly Ala Gly Leu Glu Arg
                 85                  90                  95
Leu Val Ser Leu Leu Ala Glu Thr Lys Thr Val Phe Glu Ala Asp Val
            100                 105                 110
Leu Arg His Leu Ile Ser Lys Ile Glu Asn Leu Ser Gly Thr Thr Tyr
        115                 120                 125
Ser Pro Thr Glu Ala Lys Gly Ala Ala Phe Arg Val Ile Ala Asp His
    130                 135                 140
Ile Arg Ser Leu Ser Phe Ala Ile Ala Asp Gly Leu Leu Pro Gly Asn
145                 150                 155                 160
Thr Glu Arg Gly Tyr Val Leu Arg Lys Ile Leu Arg Arg Ala Val Asn
                165                 170                 175
Tyr Gly Lys Arg Leu Gly Phe Asn Arg Pro Phe Leu Ala Asp Val Val
            180                 185                 190
Pro Ser Leu Val Asp Val Met Gly Glu Ala Tyr Pro Glu Leu Ser Ala
        195                 200                 205
Ser Val Thr Gln Ile Gln Glu Val Leu Thr Thr Glu Glu Glu His Phe
    210                 215                 220
Phe Lys Thr Leu Gln Arg Gly Gly Asn Leu Leu Gln Gln Val Val Lys
225                 230                 235                 240
Ser Ser Ala Ser Ser Ala Lys Ile Ser Gly Glu Asp Ala Phe Lys Leu
                245                 250                 255
Lys Asp Thr Tyr Gly Leu Pro Ile Asp Glu Ile Ala Leu Leu Ala Lys
            260                 265                 270
Asp Tyr Asn Tyr Ala Ile Asp Met Asp Thr Phe Glu Lys Leu Glu Val
        275                 280                 285
Glu Ala Lys Glu Arg Ser Arg Lys Asn Thr Lys Lys Thr Lys Asn Asp
    290                 295                 300
Ser Asp Ser Val Phe Gln Asp Leu Asp Pro Thr Asn Thr Ser Glu Phe
305                 310                 315                 320
Ile Gly Tyr Asp Thr Leu Ser Cys Asp Thr Phe Ile Glu Gly Ile Ile
                325                 330                 335
Lys Tyr Asn Glu Ile Ala Ser Ser Leu Glu Glu Gly Asp Glu Gly Ala
            340                 345                 350
Ile Ile Leu Arg Thr Thr Pro Phe Tyr Ala Glu Lys Gly Gly Gln Ile
        355                 360                 365
Gly Asp Ser Gly Glu Ile Phe Cys Glu Ser Gly Thr Phe Leu Val Ser
    370                 375                 380
His Thr Ile Ala Pro Lys Ala Gly Leu Ile Val His Leu Gly Lys Leu
385                 390                 395                 400
Ser Gln Gly Ser Leu Thr Thr Thr Met Ala Val Thr Ala Gln Val Asn
                405                 410                 415
Gln Asn Leu Arg Lys Lys Thr Ala Asn Asn His Thr Gly Cys His Leu
            420                 425                 430
Leu His Lys Ala Leu Glu Met Thr Leu Gly Glu His Ile Arg Gln Pro
        435                 440                 445
Gly Ser Tyr Val Asp Ser Gln Lys Ile Arg Leu Asp Phe Thr His Asn
    450                 455                 460
Lys Ala Leu Ser Pro Glu Asp Leu Leu Ala Ile Glu Thr Leu Val Asn
465                 470                 475                 480
Glu Lys Ile Arg Glu Asn Asp Pro Val Thr Ile Arg Glu Val Leu Tyr
                485                 490                 495
Ser Asp Val Met Ser Ser Ser Glu Ile Lys Gln Phe Cys Gly Asp Lys
            500                 505                 510
Tyr Gly Asp Ile Val Arg Val Val Leu Ala Gly Phe Ser His Glu Leu
        515                 520                 525
Cys Gly Gly Thr His Ala Gln Ala Thr Gly Asp Ile Gly Tyr Phe Arg
    530                 535                 540
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Ile Thr Lys Glu His Ala Val Ala Thr Gly Ile Arg Arg Ile Glu Ala
545 550 555 560
Thr Thr Gly Glu Asp Ala Glu Asn Ile Ala Arg Gly Gln Asp Val Asp
565 570 575
Leu Asn Glu Ile Ala Thr Val Ile Gln Ser Pro Lys Asp Gln Ile Leu
580 585 590
Val Lys Ile Arg Ser Val Met Glu Glu Lys Lys Asp Leu Ala Lys Gln
595 600 605
Val Ala Asp Leu Glu Asn Gln Leu Val Gln Gln Gln Val Lys Thr Leu
610 615 620
Leu Thr Ser Cys Glu Lys Ile Cys Asp Thr Ser Tyr Leu Val Tyr Tyr
625 630 635 640
Leu Thr Glu Glu Glu Gly Gln Arg Ile Gln His Tyr Ala Asn Ala Ile
645 650 655
His Lys Glu Ile Pro Thr Asn Phe Ile Ser Leu Trp Ile Thr Glu Lys
660 665 670
Asn Gly Arg Tyr Ile Val Leu Ser Arg Val Ser Asp Asp Leu Thr Lys
675 680 685
Arg Gly Val Gln Ala His Thr Leu Leu Ala Glu Leu Leu Ala Pro Tyr
690 695 700
Gly Gly Arg Cys Gly Gly Lys Ala Ile Ser Ala Gln Gly Ser Ser Ala
705 710 715 720
Glu Tyr Leu Lys

<210>650
<211>1084
<212>PRT
<213>Chlamydia trachomatis
<400>650
Gln Asn Phe Lys Thr Met Asp Phe Asp Pro Thr Ser Ile Asp Phe Ser
1 5 10 15
Ser Phe Pro Leu Leu Lys Asp Thr Lys Leu Pro Ser Leu Val Glu Asn
20 25 30
Leu His Ser Gly Ala Arg Ser Phe Val Ile Ala Lys Leu Phe Lys Glu
35 40 45
Leu Lys Arg Ser Ile Val Val Ile Thr Thr Pro Ala Lys Leu Asp Asp
50 55 60
Leu Phe Glu Asp Leu Thr Thr Leu Leu Ala Glu Ser Pro Leu Glu Phe
65 70 75 80
Pro Ala Ser Glu Ile Asp Leu Ser Pro Lys Leu Val Asn Val Asp Ala
85 90 95
Val Gly Lys Arg Asp His Ile Leu Tyr Ser Leu Gln Lys Gln Ser Ala
100 105 110
Pro Val Ile Cys Val Thr Thr Leu Lys Ala Leu Leu Glu Arg Thr Pro
115 120 125
Ser Pro Glu Ser Met Ile Arg Asp His Leu Glu Leu Arg Val Gly Glu
130 135 140
Glu Leu Asp Pro Asp Thr Leu Leu Asp Leu Cys Lys Ser Leu Gly Tyr
145 150 155 160
Arg His Glu Ala Leu Ala Arg Glu Lys Gly Asp Phe Ala Phe Arg Gly
165 170 175
Gly Ile Val Asp Ile Phe Pro Leu Ser Ser Pro Glu Pro Phe Arg Ile
180 185 190
Glu Phe Trp Gly Asp Arg Val Ser Ser Ile Arg Ser Tyr Asn Pro Ser
195 200 205
Asp Gln Leu Ser Thr Gly Lys Leu Ser Gln Ile Thr Ile Ser Pro Ala
210 215 220
Thr Ala Ile Ile Pro Thr Asp Lys Leu Ser Tyr Ser Leu Leu Asp Tyr
225 230 235 240
Phe Lys Ala Phe Pro Leu Cys Ile Phe Asp Gly Leu Ser Ser Leu Glu
245 250 255

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Asp Asn Phe Ser Asp Ile Ala Gly Ile Leu Ala Ser Leu Pro Lys Arg
            260                 265                 270
Phe Met Pro Ile Gln Asp Leu Cys Gln Arg Ile Leu Lys Glu Phe Thr
        275                 280                 285
Pro Leu Phe Phe Glu Glu Lys Thr Phe Pro Asn Leu Ile Ser His Lys
    290                 295                 300
Asp Thr Gly Phe Ser Ile Glu Ala Phe His Lys Lys Ile Ser Val Gln
305                 310                 315                 320
Arg Val Ser Leu Pro Phe Ile Tyr Pro Pro Ala Leu Ile Glu Thr Ser
                325                 330                 335
Gly Glu Gln Asn Pro Leu Leu Ala Phe Leu Lys Thr Phe Gln Asp Phe
            340                 345                 350
Cys Ala Gly Arg Thr Leu Ser Leu Ala Leu Tyr Cys Ser Asn Thr Lys
        355                 360                 365
Ser Leu Lys Glu Ala His Asp Leu Ala Ala Ala Cys Ile Pro Asn Thr
    370                 375                 380
Gln Ile Tyr Asp His Pro Thr Thr Leu Ser Ser Ser Phe Ala Leu Val
385                 390                 395                 400
Glu Ala Gly Phe Ala Ala Val Ser Leu Ser Glu Phe Ala Ala Ser Lys
                405                 410                 415
Val Leu Arg Arg Gln Lys Gln Arg Asn Tyr Phe Ser Thr Thr Thr Glu
            420                 425                 430
Glu Val Tyr Ile Pro Val Pro Gly Glu Thr Val Val His Leu His Asn
        435                 440                 445
Gly Ile Gly Lys Phe Ile Gly Ile Glu Lys Lys Pro Asn His Leu Asn
    450                 455                 460
Ile Glu Thr Asp Tyr Leu Val Leu Glu Tyr Ala Asp Lys Ala Arg Leu
465                 470                 475                 480
Tyr Val Pro Ser Asp Gln Ala Tyr Leu Ile Ser Arg Tyr Val Gly Ala
                485                 490                 495
Ser Glu Lys Ala Pro Asp Leu His His Leu Asn Gly Ala Lys Trp Arg
            500                 505                 510
Arg Ser Arg Glu Leu Ser Glu Asn Ser Val Ile Leu Tyr Ala Glu Lys
        515                 520                 525
Leu Ile Gln Met Glu Ala Gln Arg Ser Thr Ala Asn Ser Phe Ile Tyr
    530                 535                 540
Pro Pro His Gly Glu Glu Val Ile Lys Phe Ala Glu Ser Phe Pro Tyr
545                 550                 555                 560
Glu Glu Thr Pro Asp Gln Leu Lys Ala Ile Asp Gln Ile Tyr Ala Asp
                565                 570                 575
Met Met Ser Asp Lys Leu Met Asp Arg Leu Ile Cys Gly Asp Ala Gly
            580                 585                 590
Phe Gly Lys Thr Glu Ile Ile Met Arg Ala Ala Val Lys Ala Val Cys
        595                 600                 605
Asp Gly His Lys Gln Val Ile Val Met Val Pro Thr Thr Ile Leu Ala
    610                 615                 620
Asn Gln His Phe Glu Thr Phe Ser Gln Arg Met Ala Gly Leu Pro Ile
625                 630                 635                 640
Thr Ile Gly Leu Leu Ser Arg Phe Ser Gln Gly Lys Thr Met Lys Lys
                645                 650                 655
Thr Leu Glu Asp Ile Ala Gln Gly Arg Ile Asp Ile Leu Ile Gly Thr
            660                 665                 670
His Lys Val Ile Asn Lys Ala Ile Glu Phe His Asn Pro Gly Leu Leu
        675                 680                 685
Ile Ile Asp Glu Glu Gln Arg Phe Gly Val Lys Ala Lys Asp Ser Leu
    690                 695                 700
Lys Glu Arg Phe Pro Thr Ile Asp Cys Leu Thr Val Ser Ala Thr Pro
705                 710                 715                 720
Ile Pro Arg Thr Leu Tyr Leu Ser Leu Ser Gly Ala Arg Asp Leu Ser
                725                 730                 735
Leu Ile Thr Met Pro Pro Leu Asp Arg Leu Pro Val Ser Thr Phe Val
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Substitute Sheet (Rule 26)

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            740                 745                 750
Met Glu His Ser Glu Glu Thr Leu Ser Ala Ala Ile Arg His Glu Leu
        755                 760                 765
Leu Arg Gly Gly Gln Val Tyr Val Ile His Asn Arg Ile Glu Ser Ile
    770                 775                 780
Phe Arg Leu Gly Glu Thr Ile Arg Thr Leu Ile Pro Glu Ala Arg Ile
785                 790                 795                 800
Gly Val Ala His Gly Gln Met His Ala Asp Glu Leu Ala Ser Ile Phe
                805                 810                 815
Tyr Lys Phe Lys Thr Gln Gln Thr Asn Val Leu Val Ala Thr Ala Leu
            820                 825                 830
Ile Glu Asn Gly Ile Asp Ile Pro Asn Ala Asn Thr Ile Leu Ile Asp
        835                 840                 845
His Ala Asp Lys Phe Gly Met Ala Asp Leu Tyr Gln Met Lys Gly Arg
    850                 855                 860
Val Gly Arg Trp Asn Lys Lys Ala Tyr Cys Tyr Xaa Leu Val Pro His
865                 870                 875                 880
Leu Asp Arg Leu Ser Gly Pro Thr Ser Lys Arg Leu Glu Ala Leu Asn
                885                 890                 895
Lys Gln Glu Tyr Gly Gly Gly Met Lys Ile Ala Leu His Asp Leu Glu
            900                 905                 910
Ile Arg Gly Ala Gly Asn Ile Leu Gly Thr Asp Gln Ser Gly His Ile
        915                 920                 925
Ser Ala Val Gly Phe Asn Leu Tyr Cys Lys Leu Leu Lys Lys Ala Val
    930                 935                 940
Ala Ala Leu Lys His Lys Gln Lys Pro Met Leu Phe His Asp Asp Ile
945                 950                 955                 960
Lys Ile Glu Phe Pro Tyr His Ala Arg Ile Pro Glu Asp Tyr Ile Asp
                965                 970                 975
Leu Ala Ser Met Arg Ile Glu Phe Tyr Gln Lys Ile Gly Asn Ala Glu
            980                 985                 990
Ser Glu Glu Glu Leu Glu Ala Ile Glu Glu Glu Leu Arg Asp Arg Phe
        995                 1000                1005
Gly Pro Ser Pro Glu Ala Ile Ser Trp Leu Phe Ala Leu Ala Arg Ile
    1010                1015                1020
Arg Leu Ile Ala Gln Glu Tyr His Leu Ser Ser Ile Lys Gly Thr Gly
1025                1030                1035                1040
Asn Ala Leu Tyr Ile Gln Gln Tyr His Asp Lys Asp Lys Gln Ile Gln
                1045                1050                1055
Lys Thr Leu Pro Tyr Ser Leu Ser Pro Thr Pro Glu Leu Leu Val Lys
            1060                1065                1070
Glu Val Gln Glu Ser Val Glu Lys Ala Phe Pro Lys
        1075                1080
<210>651
<211>136
<212>PRT
<213>Chlamydia trachomatis
<400>651
Ser Arg Ile Ile Asp Ser Gly Glu Gly Val Leu Ser Asn Lys Ala Phe
  1                 5                  10                  15
Ser Val Val Thr Gln Ile Thr Gly Ala Leu Cys Phe Cys Arg Glu Tyr
             20                  25                  30
Arg Ile Trp Ser Leu Phe Pro Thr Ala Ser Thr Phe Thr Ser Leu Gly
         35                  40                  45
Asp Lys Ser Ile Ser Glu Ala Gly Asn Ser Arg Gly Asp Ser Ala Asn
     50                  55                  60
Arg Val Val Lys Ser Ser Asn Lys Ser Ser Ser Phe Ala Gly Val Val
 65                  70                  75                  80
Ile Thr Thr Ile Glu Arg Leu Ser Ser Leu Asn Ser Phe Ala Met Thr
                 85                  90                  95
Lys Asp Leu Ala Pro Glu Trp Arg Phe Ser Thr Lys Asp Gly Ser Phe
```

```
            100                 105                 110
Val Ser Phe Asn Lys Gly Lys Leu Glu Lys Ser Met Leu Val Gly Ser
        115                 120                 125
Lys Ser Ile Val Leu Lys Phe Cys
    130                 135
<210>652
<211>337
<212>PRT
<213>Chlamydia trachomatis
<400>652
Arg Met Pro Met Thr Gly Phe Tyr Glu Thr Ile Ser Pro Arg Asp Gln
  1               5                  10                  15
Gln Arg Pro Pro Ile Trp Phe Leu Arg Gln Val Gly Arg Tyr Ile Pro
            20                  25                  30
Gln Tyr Gln Glu Leu Lys Arg Asn Arg Ser Leu Lys Asp Phe Phe Leu
        35                  40                  45
Asp Thr Glu Ser Ile Val Glu Ala Thr Leu Leu Gly Pro Ser Leu Leu
    50                  55                  60
Gly Val Asp Ala Ala Ile Val Phe Ala Asp Ile Leu Ser Ile Leu Glu
65                  70                  75                  80
Gly Phe Ser Val Asp Tyr Arg Phe Ala Pro Gly Pro Glu Val Ser Tyr
                85                  90                  95
Ser Pro His Glu Pro Leu Ile Phe Thr Lys Asp Pro Gln Glu Thr Phe
            100                 105                 110
Ser Phe Leu Leu Glu Ala Ile Gln Gln Leu Thr Lys Arg Leu Thr Val
        115                 120                 125
Pro Leu Ile Ala Phe Ala Ala Ser Pro Phe Thr Leu Ala Ser Tyr Leu
    130                 135                 140
Ile Glu Gly Gly Ala Ser Arg Asp Tyr Pro Lys Thr Ile Ala Phe Leu
145                 150                 155                 160
Tyr Gln Tyr Pro Asp Arg Phe Lys Ala Leu Leu Asp Glu Ile Thr Leu
                165                 170                 175
Gly Thr Ala Thr Tyr Leu Gln Met Gln Val Gln Ala Gly Ala Ala Ala
            180                 185                 190
Ile Gln Leu Phe Glu Ser Ser Ser Leu Arg Leu Pro Pro His Leu Phe
        195                 200                 205
Ala Lys Tyr Val Val Ala Pro Asn Thr Lys Leu Ile Arg Gln Ile Lys
    210                 215                 220
Gln Thr Gly Asn Pro Pro Ile Ser Leu Phe Cys Arg Cys Phe Tyr Gln
225                 230                 235                 240
Glu Phe Leu Ser Leu Tyr Ala Ile Gly Ala Asp Thr Leu His Pro Asp
                245                 250                 255
Tyr His Val Glu Leu Pro Glu Val Tyr Arg Gln Ile His Ser Pro Gly
            260                 265                 270
Ser Ile Gln Gly Asn Phe Asp Pro Ala Leu Leu Leu Leu Pro Gln Asp
        275                 280                 285
Ala Leu Ile Ala His Leu Glu Ala Tyr Leu Ala Pro Leu Lys Gln Gln
    290                 295                 300
Ser His Tyr Ile Phe Asn Leu Gly His Gly Ile Leu Pro Gln Thr Pro
305                 310                 315                 320
Ile Glu Asn Val Gln Ala Val Val Ser Cys Leu Thr Ser Ile Ser Thr
                325                 330                 335
Ser

<210>653
<211>320
<212>PRT
<213>Chlamydia trachomatis
<400>653
Met Phe Asn Ile Asn Phe Asn Phe Leu Lys Gly Leu His Gln Pro Ala
  1               5                  10                  15
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```
Pro Arg Tyr Thr Ser Tyr Pro Thr Ile Val Asp Trp Glu Ser Ser Ser
            20                  25                  30
Asp Tyr Gly Tyr Thr Ala Leu Glu Arg Leu Ala Gln Glu Gln Asp Pro
        35                  40                  45
Leu Ser Leu Tyr Phe His Ile Pro Phe Cys Gln Ser Met Cys Leu Tyr
    50                  55                  60
Cys Gly Cys Thr Val Val Leu Asn Arg Lys Ala Glu Ile Val Asp His
65                  70                  75                  80
Tyr Ile Glu Thr Leu Ile Gln Glu Met Arg Leu Ala Phe Ser Leu Leu
                85                  90                  95
Gly Gly Lys Lys Pro Val Ser Arg Ile His Phe Gly Gly Gly Thr Pro
            100                 105                 110
Ser Arg Leu Ser Arg Ala Gln Phe Glu Arg Leu Phe Thr His Ile His
        115                 120                 125
Arg Phe Phe Asp Leu Ser Asn Ile Glu Glu Leu Ala Ile Glu Phe Asp
    130                 135                 140
Pro Arg Ser Leu Arg Glu Asp Ala Asp Lys Pro Leu Phe Leu His Asn
145                 150                 155                 160
Leu Gly Phe Asn Arg Val Ser Leu Gly Ile Gln Asp Thr Gln Trp Glu
                165                 170                 175
Val Gln Glu Ala Val Arg Arg Arg Gln Ser Tyr Glu Glu Ser Leu Leu
            180                 185                 190
Ala Tyr Gln Leu Phe Arg Asp Leu Lys Phe Thr Gly Ile Asn Ile Asp
        195                 200                 205
Leu Ile Tyr Gly Leu Pro Lys Gln Thr Gln Ser Ser Phe Lys Gln Thr
    210                 215                 220
Ile Glu His Ile Leu Asp Met Arg Pro Asp Arg Leu Ala Leu Phe Ser
225                 230                 235                 240
Phe Ala His Val Pro Trp Ala Lys Pro His Gln Lys Ala Leu Arg Thr
                245                 250                 255
Lys Asp Leu Pro Ser Met Glu Glu Lys Phe Ala Ile Tyr Ser Gln Ser
            260                 265                 270
Arg His Thr Leu Ile Gln Glu Gly Tyr Gln Ala Ile Gly Leu Asp His
        275                 280                 285
Phe Ser Leu Pro Asp Asp Pro Leu Thr Ile Ala Leu Lys Asn Lys Thr
    290                 295                 300
Leu Ile Arg Asn Phe Gln Gly Thr Leu Phe Leu Leu Lys Lys Ile Phe
305                 310                 315                 320
<210>654
<211>149
<212>PRT
<213>Chlamydia trachomatis
<400>654
Phe Pro Arg Tyr Ser Leu Pro Pro Glu Glu Asp Leu Leu Gly Phe Gly
  1                 5                  10                  15
Ile Ser Ala Thr Ser Phe Ile Arg Gly Ile Tyr Leu Gln Asn Val Lys
            20                  25                  30
Asp Leu Arg Glu Tyr Ser Glu Thr Ile Gln Ala Ser Lys Leu Ala Thr
        35                  40                  45
Val Lys Gly Lys Ile Leu Ser Gln Asp Asp Lys Ile Arg Lys Trp Val
    50                  55                  60
Ile His Thr Leu Met Cys Ser Phe Ser Leu Ser Lys Leu Glu Phe Glu
65                  70                  75                  80
Gln Arg Phe His Glu Arg Phe Asp Arg Tyr Phe Ala Asp Ser Tyr Asp
                85                  90                  95
Arg Leu Cys Gly Met Glu Ser Ala Gly Leu Ile Arg Gln Asp Ser Ser
            100                 105                 110
Ser Leu Gln Val Thr Pro Leu Gly Glu Leu Phe Val Arg Val Ile Ala
        115                 120                 125
Thr Ala Phe Asp His Tyr Phe Leu Lys Asn Ile Val Glu Lys Pro Leu
    130                 135                 140
```

SUBSTITUTE SHEET (RULE 26)

Phe Ser Lys Ser Ile
145

<210>655
<211>424
<212>PRT
<213>Chlamydia trachomatis
<400>655

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Met Lys His Ala Leu Ile Val Gly Ser Gly Ile Ala Gly Leu Ser Ala
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Ala Trp Trp Leu His Lys Arg Phe Pro His Val Gln Leu Ser Ile Leu
             20                  25                  30
Glu Lys Glu Ser Arg Ser Gly Gly Leu Ile Val Thr Glu Lys Gln Gln
         35                  40                  45
Gly Phe Ser Leu Asn Met Gly Pro Lys Gly Phe Val Leu Ala His Asp
     50                  55                  60
Gly Gln His Thr Leu His Leu Ile Gln Ser Leu Gly Leu Ala Asp Glu
 65                  70                  75                  80
Leu Leu Tyr Ser Ser Pro Glu Ala Lys Asn Arg Phe Ile His Tyr Asn
                 85                  90                  95
Asn Lys Thr Arg Lys Val Ser Pro Trp Thr Ile Phe Lys Gln Asn Leu
            100                 105                 110
Pro Leu Ser Phe Ala Lys Asp Phe Phe Ala Arg Pro Tyr Lys Gln Asp
        115                 120                 125
Ser Ser Val Glu Ala Phe Phe Lys Arg His Ser Ser Ser Lys Leu Arg
    130                 135                 140
Arg Asn Leu Leu Asn Pro Ile Ser Ile Ala Ile Arg Ala Gly His Ser
145                 150                 155                 160
His Ile Leu Ser Ala Gln Met Ala Tyr Pro Glu Leu Thr Arg Arg Glu
                165                 170                 175
Ala Gln Thr Gly Ser Leu Leu Arg Ser Tyr Leu Lys Asp Phe Pro Lys
            180                 185                 190
Glu Lys Arg Thr Gly Pro Tyr Leu Ala Thr Leu Arg Ser Gly Met Gly
        195                 200                 205
Met Leu Thr Gln Ala Leu His Asp Lys Leu Pro Ala Thr Trp Tyr Phe
    210                 215                 220
Ser Ala Pro Val Ser Lys Ile Arg Gln Leu Ala Asn Gly Lys Ile Ser
225                 230                 235                 240
Leu Ser Ser Pro Gln Gly Glu Ile Thr Gly Asp Met Leu Ile Tyr Ala
                245                 250                 255
Gly Ser Val His Asp Leu Pro Ser Cys Leu Glu Glu Ile Pro Glu Thr
            260                 265                 270
Lys Leu Ile Lys Gln Thr Thr Ser Ser Trp Asp Leu Ser Cys Val Ser
        275                 280                 285
Leu Gly Trp His Ala Ser Leu Pro Ile Pro His Gly Tyr Gly Met Leu
    290                 295                 300
Phe Ala Asp Thr Pro Pro Leu Leu Gly Ile Val Phe Asn Thr Glu Val
305                 310                 315                 320
Phe Pro Gln Pro Glu Arg Pro Asn Thr Ile Val Ser Leu Leu Leu Glu
                325                 330                 335
Gly Arg Trp His Gln Glu Glu Ala Tyr Ala Phe Ser Leu Ala Ala Ile
            340                 345                 350
Ser Glu Tyr Leu Gln Ile Tyr Thr Pro Pro Gln Ala Phe Ser Leu Phe
        355                 360                 365
Ser Pro Arg Glu Gly Leu Pro Gln His His Val Gly Phe Ile Gln Ser
    370                 375                 380
Arg Gln Arg Leu Leu Ser Lys Leu Pro His Asn Ile Lys Ile Val Gly
385                 390                 395                 400
Gln Asn Phe Ala Gly Pro Gly Leu Asn Arg Ala Thr Ala Ser Ala Tyr
                405                 410                 415
Lys Ala Ile Ala Ser Leu Leu Pro
            420
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Sequence Listing

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<211>856
<212>PRT
<213>Chlamydia trachomatis
<400>656

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Lys Ile Leu His Arg Ser Phe Gln Asn Gly Leu Leu Arg Cys Pro His
  1               5                  10                  15
Asp Glu Lys Ser Leu Gln Ser Ser Leu Lys Arg Asn Lys Gln Val Phe
             20                  25                  30
Phe His Met Asn Ile Tyr Arg Phe Ile Ser Gly Ser Cys Ser Trp Phe
         35                  40                  45
Leu Ile Gly Trp Gly Ile Cys Phe Gly Ala Asp Val Pro Leu Ser Phe
     50                  55                  60
Gly His Gln Cys Ala Asp Val Arg Lys Ala Met Gln Glu Gly Lys Pro
 65                  70                  75                  80
Leu Leu Pro Ile Phe Asp Ala Phe Ile Arg Arg Ile Val Asn Asp Ser
                 85                  90                  95
Ser Ser Leu Ser Glu Lys Asp Trp Glu Thr Ala Thr Trp Leu Ile Cys
            100                 105                 110
Glu Tyr Ile Arg Gly Ser Leu Lys Arg Gly Glu Gln Glu Leu Cys Ser
        115                 120                 125
Glu Leu Val Lys Pro Leu Phe Ser Leu Ala Val Met Pro Pro Gln Ser
    130                 135                 140
Lys Ala Arg Ile Lys Gln Val Trp Gln Val Leu Asn Pro Gln Gly Ala
145                 150                 155                 160
Ser Leu Lys Asp Leu Val Arg Leu Leu Glu Ser Ser Gly Cys Ser Ser
                165                 170                 175
Ser Pro Gln Asp His Leu Leu Leu Ser Leu Tyr Asn Met Thr Leu His
            180                 185                 190
Ser Ser Tyr Glu Asn Lys Lys Ala Glu Ile Leu Phe Ala Arg Glu Gln
        195                 200                 205
Lys Asn Tyr Gln Asp Ala Leu Arg Leu Cys Glu Glu Leu Gln Glu Asn
    210                 215                 220
Leu Thr Ser Gly Leu Cys Ser Pro Leu Ser Thr Val Tyr Glu Val Glu
225                 230                 235                 240
Gln Ala Phe Leu Lys Arg Ile Ser Leu Ala Ile Arg Trp Glu Gln Glu
                245                 250                 255
Lys Glu Leu Gln Gly Ser Pro Ser Ile Glu Leu Leu Leu Ala Tyr Cys
            260                 265                 270
Ser Ala Glu Glu Ser Tyr Ala Glu Ala Val Glu Gln Leu Ile Lys Lys
        275                 280                 285
Ile Glu Leu Gly Ser Leu Asp Arg Ser Gln Glu Val Asp Ala Ile Leu
    290                 295                 300
Phe Ala His Ala Leu Ser Lys Leu Pro Trp Glu Glu Thr Leu Gly Glu
305                 310                 315                 320
His Glu Leu Glu Val Leu Ile Ser Gly Gly His Tyr Leu Thr Ser Ile
                325                 330                 335
Tyr Ser Gln His Ala Tyr Phe Ser Leu Leu Glu Gln Tyr Phe Lys Lys
            340                 345                 350
Ser Gln Ile Gln Glu Ile Ser Arg Leu Leu Asp Phe Gly Lys Thr Val
        355                 360                 365
Phe Val Glu Thr His Lys Lys Tyr Pro Glu Tyr Leu Phe Phe Leu Gly
    370                 375                 380
Lys Tyr Trp Phe Tyr Leu Arg Asp Phe Ser Arg Ala Glu Glu Ala Phe
385                 390                 395                 400
Ser Ser Val Ile Arg Tyr Ala Asp Arg Leu Gly Val Ser Leu Ala Glu
                405                 410                 415
Thr Tyr Glu Tyr Leu Gly Cys Leu Ala Cys Tyr Lys Gly His Tyr Ala
            420                 425                 430
Ser Ala Lys Glu Phe Phe Leu Lys Ala Tyr Lys Gly Trp Gly Arg Glu
        435                 440                 445
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Asp Ala Gly Ile Gly Leu Tyr Leu Leu Ala Val Leu Glu Lys Asp Pro
    450                 455                 460
Ile Leu Cys Gln Gln Val Arg Glu Gln Val Ser Leu Ser Phe Ser His
465                 470                 475                 480
Gln Glu Phe Leu Lys Trp Met Asp Arg Asn Phe Leu Pro Glu Pro Gly
                485                 490                 495
Lys Glu Gly Ser Ser Phe Phe Lys Val Leu Gly Ser Ser Arg Xaa Leu
            500                 505                 510
Ser Glu Glu Glu Phe Tyr Gly Xaa Leu Leu Lys Glu Met Ile Ser Arg
        515                 520                 525
Xaa His Arg Glu Lys Leu Ser Cys Ser Pro Ile Gln Arg Leu Val Tyr
    530                 535                 540
Asp Gln Leu Asp Arg Glu Ile Gln Leu Arg Leu Thr Glu Thr Leu Ile
545                 550                 555                 560
Gln Thr Glu Asp Leu Leu Val Arg Arg Lys Leu Ser Leu Trp Arg Ala
                565                 570                 575
Leu Tyr Glu Gly Ser Phe Val Ser Trp Gly Ser Ala His Gln Asn Gln
            580                 585                 590
Thr Leu Phe Glu Lys Ser Ile Leu Gln Cys Phe Ser Ala Leu Ser Gln
        595                 600                 605
Gln Asp Pro Ser Ala Ile Gln Gln Ile Ala Glu Ala Phe Ser Ser Gly
    610                 615                 620
Ala Ser Leu Trp Gln Ser Ser Leu Arg Met Val Trp Ala Val Ser His
625                 630                 635                 640
Thr Ser Glu Asn Pro Ile Ser Lys Ala Tyr Ser Leu Gly Ile Ser Asp
                645                 650                 655
Arg Pro Trp Gly Asp Arg Leu Tyr Leu Leu Gln Tyr Ser Leu Glu Gln
            660                 665                 670
Tyr Leu Ser Gly Asp Thr Glu Leu Leu Glu Tyr Leu Thr Gln Phe Pro
        675                 680                 685
Glu Leu Phe Pro Asn Ser Pro Leu Leu Pro Leu Val Tyr Tyr Leu Gln
    690                 695                 700
Ala Arg Gly Glu Gly Asp Pro Ile Arg Lys Ile Ala Trp Leu Thr Lys
705                 710                 715                 720
Ala Leu Glu Thr Phe Thr Glu Asn Ser Leu Leu Ala Lys Glu Met Lys
                725                 730                 735
Ala Trp Ala Pro Leu Tyr Tyr Leu Met Arg Met Asp Leu Ala Glu Thr
            740                 745                 750
Tyr Leu Tyr Leu Gly Asn Val Ser Lys Ser Asp Thr Leu Phe Glu Ala
        755                 760                 765
Ile Gln Glu Glu Trp Asp Ala Pro His His Pro Tyr Val Lys Leu Ile
    770                 775                 780
Asp Pro Pro His Ile Arg Val Ser Leu Glu Met Arg Trp Val Ser Gly
785                 790                 795                 800
Leu Ala His Val Tyr Glu Ala Ile Gln Ala Thr Glu Gln Arg Asn Ala
                805                 810                 815
Leu Leu Ile Ser His Ile Glu Lys Arg Phe Phe Gln Thr Arg Pro Arg
            820                 825                 830
Gln Glu Tyr Ile Gly Lys Met Leu Thr Phe Thr Ser Ser Leu Cys Arg
        835                 840                 845
Glu Leu Leu Ala Asp Ala Ser Trp
    850                 855
<210>657
<211>125
<212>PRT
<213>Chlamydia trachomatis
<400>657
Met Ala Leu Lys Asp Thr Ala Lys Lys Met Thr Asp Leu Leu Glu Ser
  1               5                  10                  15
Ile Gln Gln Asn Leu Leu Lys Ala Glu Lys Gly Asn Lys Ala Ala Ala
             20                  25                  30
```

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Gln Arg Val Arg Thr Glu Ser Ile Lys Leu Glu Lys Thr Ala Lys Val
          35                  40                  45
Tyr Arg Lys Glu Ser Ile Lys Ala Glu Lys Met Gly Leu Met Lys Lys
      50                  55                  60
Ser Lys Ala Ala Ala Lys Lys Ala Lys Ala Ala Ala Lys Lys Pro Val
 65                  70                  75                  80
Arg Ala Thr Lys Thr Val Ala Lys Lys Ala Cys Thr Lys Arg Thr Cys
                 85                  90                  95
Ala Thr Lys Ala Lys Val Lys Pro Thr Lys Lys Ala Ala Pro Lys Thr
            100                 105                 110
Lys Val Lys Thr Ala Lys Lys Thr Arg Ser Thr Lys Lys
        115                 120                 125
<210>658
<211>435
<212>PRT
<213>Chlamydia trachomatis
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Ser Leu Leu Phe Phe Leu Leu Ser Phe Pro Phe Ser Gln Arg Gln Val
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Leu Ala Asn Lys Ser Thr Thr Ser His Leu Leu Trp Arg Lys Asn Leu
            20                  25                  30
Ser Leu Ser Leu Gly Phe Lys Leu Leu Ser Cys Tyr Arg Asn Cys Lys
          35                  40                  45
His Phe Gly Val Cys Gly Gly Cys Ser Ser Pro Gln Met Glu Tyr Ala
      50                  55                  60
Ser Ser Leu Lys Thr Lys Glu Leu Ala Leu His Asn Leu Phe Ala Pro
 65                  70                  75                  80
Leu Ile Pro Ser Gln Asn Ile Leu Pro Val Ile Pro Cys Ser Pro Leu
                 85                  90                  95
Leu Arg Gly Arg Asn Lys Met Glu Phe Ser Phe Tyr Gln Thr Val Asp
            100                 105                 110
Gly Glu Lys Thr Leu Gly Phe Ile Ser Pro Ser Lys Pro Lys Lys Gly
        115                 120                 125
Ile Pro Ile Thr Glu Cys Leu Met Ile Asp Glu Arg Ala Met Asp Ile
    130                 135                 140
Leu Asn Ile Thr Arg Ser Trp Trp Thr Ala His Pro Asp Leu Ser Ala
145                 150                 155                 160
Tyr Tyr Pro Pro Leu Asn Lys Gly Ser Leu Cys Thr Ile Thr Val Arg
                165                 170                 175
Val Gly Asn Ile Ser Asn Asp Phe Met Ile Ile Leu Thr Thr Ser Gly
            180                 185                 190
Arg Glu Glu Phe Ala Val Pro Leu Asn Ile Ile Gln Glu Trp Gln Gln
        195                 200                 205
Ser Leu Leu Asp Ser Gly Leu Pro Ile Thr Ser Ile Phe Trp Glu Glu
    210                 215                 220
Lys Leu Ser Ala Arg Asn Ser Pro Thr Thr Phe Arg Thr Thr His Leu
225                 230                 235                 240
Tyr Gly Ala Pro Phe Leu Lys Gln Gln Leu Ser Ile Asp Gly Arg Ser
                245                 250                 255
Ser Leu Phe His Ile Arg Pro Arg Ser Phe Phe Gln Pro Gln Ser Leu
            260                 265                 270
Gln Ala Glu Lys Ile Ile Gln Thr Ile Lys Glu Phe Ile Asp Pro Cys
        275                 280                 285
Gly Glu Glu Thr Leu Leu Asp Leu Tyr Cys Gly Ala Gly Thr Ile Gly
    290                 295                 300
Ile Leu Leu Ala Pro Tyr Val Lys Lys Ile Ile Gly Val Glu Leu Val
305                 310                 315                 320
Pro Asp Ala Val Ala Ser Ala Gln Glu Asn Ile Gln Leu Asn Ser Val
                325                 330                 335
Asp Met Glu Val Phe Leu Glu Asp Ala Lys Gln Phe Cys Lys Arg Asn
            340                 345                 350
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Glu Asn Leu Pro Ser Pro Asp Ile Val Val Ile Asp Pro Pro Arg Cys
355 360 365
Gly Met Gln Asn Lys Ala Leu Lys Tyr Leu Leu Arg Met Ala Pro Lys
370 375 380
Lys Ile Val Tyr Val Ser Cys Asn Pro Leu Thr Gln Ile Gln Glu Cys
385 390 395 400
Ser Val Leu Val Glu Gln Gly Tyr Gln Leu Arg His Met Gln Pro Ile
405 410 415
Asp Gln Phe Pro His Thr Asn His Leu Glu Asn Ile Val Leu Leu Glu
420 425 430
Arg Leu Ser
435

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<213>Chlamydia trachomatis
<400>659
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Ser Leu Ile Pro Asn Ala Val Pro Ser Gly Lys Gly Leu Ile Pro Leu
20 25 30
Ser Ser Cys Val Asn Leu Ser Phe Leu Thr Leu Ile Lys Gly Thr Ser
35 40 45
Met Tyr Ser Arg Leu Phe Phe Ser Ile Leu Xaa Phe Leu Gly Cys Cys
50 55 60
Pro Ala Leu Phe Ala Asp Thr Asp Ser Pro Gln Arg Ala Thr Phe Gly
65 70 75 80
Gln Pro Ala Val Met Leu Gly Ile Ala Ile Val Phe Phe Tyr Phe Ile
85 90 95
Leu Trp Arg Pro Glu Gln Xaa Arg Arg Gln Ala Met Glu Lys Arg Lys
100 105 110
Ser Glu Leu Ala Val Gly Asp Lys Val Thr Ala Met Gly Ile Val Gly
115 120 125
Thr Ile Ala Glu Ile Arg Glu Xaa Thr Val Ile Leu Asn Ile Ala Ser
130 135 140
Gly Lys Ile Glu Ile Leu Lys Thr Ala Ile Ser Glu Ile Leu Lys Ala
145 150 155 160
Glu Lys

<210>660
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<212>PRT
<213>Chlamydia trachomatis
<400>660
Ile Ser Gly Ile Ala Ile Pro Ser Pro Cys Gly Gly Lys Ala Ala Cys
1 5 10 15
Lys Gln Cys Lys Val Arg Ile Thr Lys Asn Ala Asp Glu Pro Leu Glu
20 25 30
Thr Asp Arg Ser Thr Phe Ser Lys Gln Gln Leu Glu Gln Gly Trp Arg
35 40 45
Leu Ser Cys Gln Thr Lys Val Gln His Asp Leu Cys Leu Glu Val Glu
50 55 60
Asp Arg Tyr Phe Asn Ala Ser Ser Trp Glu Gly Thr Val Val Ser Asn
65 70 75 80
Glu Asn Val Ala Thr Phe Ile Lys Glu Leu Val Leu Ser Val Asp Pro
85 90 95
Ser Arg Pro Ile Pro Phe Lys Pro Gly Gly Tyr Leu Gln Ile Thr Val
100 105 110
Pro Pro Tyr Lys Thr Asn Thr Phe Gly Leu Glu Ala Asp Tyr Gly Ser
115 120 125
Pro Ile Leu

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    130
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<211>265
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<213>Chlamydia trachomatis
<400>661
Ile Leu Arg Ala Leu Phe Leu Leu Asn Leu Glu Ala Ile Tyr Lys Leu
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Pro Phe Leu Leu Ile Lys Pro Ile Leu Ser Asp Trp Lys Gln Thr Met
            20                  25                  30
Asp Pro Gln Tyr Tyr Ser Asp Trp Glu Thr Phe His Leu Phe Asp Gln
        35                  40                  45
Val Ile Asp Asn Leu Ser Leu Asp Thr Asp Ser Ala Asn Lys Ala Tyr
    50                  55                  60
Ser Leu Ala Ser Tyr Pro Ala Glu Leu Pro Leu Ile Lys Phe Asn Val
65                  70                  75                  80
Arg Ile Ala Thr Pro Ser Phe Val Asp Gln Ala Pro Asp Pro Thr Ile
                85                  90                  95
Pro Trp Gly Val Cys Ser Ser Tyr Ile Phe Ser Leu Lys Pro Gly Asp
            100                 105                 110
Lys Val Met Val Ser Gly Pro Tyr Gly Glu Ser Phe Met Lys Glu Asn
        115                 120                 125
Asn Arg Pro Val Ile Phe Leu Ile Gly Gly Ala Gly Ser Ser Phe Gly
    130                 135                 140
Arg Ser His Ile Leu Asp Leu Leu Leu Asn Lys His Ser Asp Arg Glu
145                 150                 155                 160
Leu Thr Leu Trp Tyr Gly Ala Arg Ser Leu Lys Glu Asn Ile Tyr Gln
                165                 170                 175
Glu Glu Tyr Glu Lys Leu Glu Lys Glu Phe Pro Asn Phe His Tyr His
            180                 185                 190
Leu Val Leu Ser Gln Pro Leu Gln Glu Asp Leu Asp Gln Gly Trp Asp
        195                 200                 205
Lys Asn Asp Pro Ile Lys Thr Asn Phe Leu Phe Lys Ala Phe Glu Leu
    210                 215                 220
Gly Gln Leu Ser His Leu Pro Asn Pro Glu Asp Tyr Leu Tyr Tyr Val
225                 230                 235                 240
Cys Gly Pro Ala Leu His Asn Ser Ser Ile Leu Thr Val Leu Asp Asn
                245                 250                 255
Tyr Gly Val Ser Ala Leu Leu Leu Phe
            260                 265
<210>662
<211>656
<212>PRT
<213>Chlamydia trachomatis
<400>662
Met Gly Lys Glu Arg Lys Lys Ala Ser Val Ser Leu Phe Ser Thr Lys
  1               5                  10                  15
Gln Ser Leu Leu Leu Lys His Ala Cys Tyr Leu Ala Leu Ala Cys Phe
            20                  25                  30
Ser Gly Leu Ser Leu Trp Ser Phe Gln His Asn Gln Pro Tyr Thr Gln
        35                  40                  45
Asn Trp Ile Gly Leu Leu Gly Trp Ser Leu Ser Ser Phe Leu Leu Tyr
    50                  55                  60
Asn Phe Gly Val Ala Ala Phe Leu Ile Pro Leu Asn Phe Gly Trp Leu
65                  70                  75                  80
Ser Phe Leu Asn Met Lys Arg Thr Pro Ala Pro Leu Ala Phe Arg Lys
                85                  90                  95
Ala Ala Ala Phe Gly Ala Ile Pro Val Cys Cys Ala Val Leu Leu Ser
            100                 105                 110
Met Ile Ser Pro Ala Gln Asn Leu Pro Gln Phe Leu Ala Thr Arg Val
        115                 120                 125
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Sequence Search

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Pro Met Val Val Met Asp Leu Gln Pro Pro Lys Ala Tyr Leu Gly Gly
    130                 135                 140
Ile Pro Phe Tyr Leu Leu Tyr Asp Gly Asn Ser Phe Ser Leu Lys Leu
145                 150                 155                 160
Leu Ile Gly Ala Val Gly Thr Gly Leu Ile Phe Leu Ala Ile Leu Leu
                165                 170                 175
Cys Ala Ile Phe Tyr Leu Ile Pro Lys Ser Phe Val Leu Lys Lys Lys
            180                 185                 190
Ala Leu Leu Asp Asp Leu Leu Lys Phe Leu Lys Asn Lys Phe Tyr Ala
        195                 200                 205
Cys Trp Asn Ala Cys Lys Lys Leu Leu Lys Asn Leu Val Asn Asn Lys
    210                 215                 220
Ser Tyr Val Pro Glu Pro Ser Leu Arg Val Pro Ser Ser Pro Ser Val
225                 230                 235                 240
Ala Lys Lys Glu Met Leu Lys Leu Pro Thr Pro Val Ile Ser Leu Pro
                245                 250                 255
Leu Glu Asn Lys Asp Leu His Asp Asp Ser Ser Val Asn Arg Thr Ile
            260                 265                 270
Phe Leu Thr Pro Pro His Pro Thr Lys Arg Thr Leu Ser Pro Gln Lys
        275                 280                 285
Arg Thr Asp Leu Pro Asn Leu Leu Pro Lys Asp Ser Ala Ser Ala Pro
    290                 295                 300
Ala Gln Thr Ser Tyr Lys Pro Leu Pro Thr Pro Ser Pro Phe Val Leu
305                 310                 315                 320
Ala Gly Asp Ala Pro Asp Leu Pro Gln Tyr His Leu Leu Ser Lys Arg
                325                 330                 335
Asn Val Arg Arg Pro Glu Ser Leu Leu Glu Glu Leu Lys Lys Lys Ala
            340                 345                 350
Ala Ile Leu Gln Gln Thr Leu Ala Ser Phe Gly Ile Glu Ala Ala Ile
        355                 360                 365
Gly Asn Ile Cys Ser Gly Pro Thr Leu Ala Ala Phe Glu Val Leu Pro
    370                 375                 380
Asn Thr Gly Val Lys Val Gln Lys Ile Lys Ala Leu Glu Asn Asp Ile
385                 390                 395                 400
Ala Leu Asn Leu Gln Ala Ser Ser Ile Arg Ile Ile Ala Pro Ile Pro
                405                 410                 415
Gly Lys Ala Ala Val Gly Ile Glu Ile Pro Asn Pro Asp Pro Gln Pro
            420                 425                 430
Val Asn Phe Arg Asp Leu Leu Glu Asp Tyr Gln Lys Gly Thr Gln Arg
        435                 440                 445
Leu Gln Val Pro Leu Leu Leu Gly Arg Lys Ala Asn Gly Asp Asn Phe
    450                 455                 460
Trp Thr Asp Leu Ala Thr Met Pro His Leu Ile Ile Ala Gly Thr Thr
465                 470                 475                 480
Gly Ser Gly Lys Ser Val Cys Ile Asn Thr Ile Val Met Ser Leu Ile
                485                 490                 495
Met Thr Ser Pro Pro Thr Asp Ile Lys Leu Val Ile Val Asp Pro Lys
            500                 505                 510
Lys Val Glu Leu Thr Gly Tyr Ser Gln Leu Pro His Met Leu Thr Pro
        515                 520                 525
Val Ile Thr Glu Ser Lys Glu Ala His Ser Ala Leu Ile Trp Leu Val
    530                 535                 540
Arg Glu Met Glu Leu Arg Tyr Glu Ile Leu Arg Phe Leu Gly Leu Arg
545                 550                 555                 560
Asn Ile Gln Ser Phe Asn Ser Arg Thr Arg Asn Val Asp Ile Glu Ala
                565                 570                 575
Ser Tyr Asp Lys Glu Ile Pro Glu Lys Met Pro Phe Ile Val Gly Ile
            580                 585                 590
Ile Asp Glu Leu Ser Asp Leu Leu Leu Ser Ser Ser His Asp Ile Glu
        595                 600                 605
Thr Pro Ile Val Arg Leu Ala Gln Met Ala Arg Ala Val Gly Ile His
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SEQUENCE LISTING

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    610                 615                 620
Leu Ile Leu Ala Thr Gln Arg Pro Ser Arg Asp Val Ile Thr Gly Ile
625                 630                 635                 640
Ile Lys Ala Asn Ser Leu Leu Glu Ser Pro Leu Lys Leu Pro Thr Lys
                645                 650                 655
<210>663
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<212>PRT
<213>Chlamydia trachomatis
<400>663
Ser Cys Arg Asn Pro Pro Asn Leu Ser Asn Thr Thr Pro Phe Ser Arg
  1               5                  10                  15
Cys Asp His Arg Asn Asn Gln Ser Lys Phe Pro Ser Arg Ile Ala Phe
            20                  25                  30
Lys Val Ala Asn Lys Val Asn Ser Gln Ile Ile Ile Asp Glu Pro Gly
        35                  40                  45
Ala Glu Asn Leu Met Gly Asn Gly Asp Met Leu Val Val Ser Pro Gly
    50                  55                  60
Ser Phe Ala Pro Val Arg Val Gln Gly Ala Tyr Ile Cys Asp Asp Asp
65                  70                  75                  80
Ile Asn Lys Val Ile Lys Asp Leu Cys Ser Arg Phe Pro Cys Lys Tyr
                85                  90                  95
Val Ile Pro Ser Phe Asn Thr Tyr Asp Asp Pro Gly Ser Met Asp Pro
            100                 105                 110
Glu Asp Leu Asp Pro Leu Phe Asn Gln Ala Lys Thr Leu Val Leu Gln
        115                 120                 125
Thr Gly Asn Ala Ser Thr Thr Phe Leu Gln Arg Lys Leu Lys Ile Gly
    130                 135                 140
Tyr Ala Arg Ala Ala Ser Ile Ile Asp Gln Leu Glu Glu Ala Arg Ile
145                 150                 155                 160
Val Gly Pro Ser Glu Gly Ala Lys Pro Arg Gln Ile Leu Val Gln Leu
                165                 170                 175
Ser Asn Gln Asp Asp
            180
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<213>Chlamydia trachomatis
<400>664
Ser Met Glu Gly Phe Cys Pro Ile Ala Ser Gly Ser Lys Gly Asn Cys
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Ala Tyr Leu Gly Thr Arg Ser Cys Lys Leu Leu Ile Asp Leu Gly Ile
            20                  25                  30
Ser Lys Gln Ala Val Thr Glu Ala Leu His Ser Met Gly Ile His Pro
        35                  40                  45
Glu Asp Ile Gln Gly Ile Phe Val Thr His Glu His Ser Asp His Ile
    50                  55                  60
Ala Gly Leu Arg Ser Phe Ile Lys Thr Tyr Arg Thr Pro Ile Ile Cys
65                  70                  75                  80
Asn Ile Glu Thr Ala Arg Ser Leu Arg Gln Leu Leu Asp Leu Cys Pro
                85                  90                  95
Thr Phe Lys Ile Phe Thr Thr Gly His Arg Phe Ser Leu Glu Asp Leu
            100                 105                 110
Arg Val Gln Thr Phe Asn Val Pro His Asp Ala Val Asp Pro Val Gly
        115                 120                 125
Phe Ile Phe Gln Tyr Ser Gly Met Lys Leu Gly Phe Cys Thr Asp Leu
    130                 135                 140
Gly Trp Val Thr Ser Trp Ile Thr His Leu Leu Cys Asp Cys Asp Tyr
145                 150                 155                 160
Leu Leu Ile Glu Ser Asn His Asp Pro Glu Met Val Leu Arg Ser Ser
                165                 170                 175
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sequence listing

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Arg Pro Glu Ser Cys Lys Gln Arg Ile Leu Ser Lys Gln Gly His Ile
            180                 185                 190
Ser Asn Ala Glu Cys Gly Ala Leu Leu Gln Arg Val Leu Thr Pro Arg
        195                 200                 205
Ile Lys Lys Ile Tyr Leu Ala His Leu Ser Leu Glu Cys Asn Thr Ala
    210                 215                 220
Glu Gln Ala Leu Asn Thr Val Thr Ser Ala Ile Gln Glu Ile Thr Asp
225                 230                 235                 240
Val His Pro Val Ile Ala Gln Ser Ser Gly Ile Thr Asp Pro Ile Phe
                245                 250                 255
Phe Ser Ala Pro Ser Leu Val
            260
<210>665
<211>260
<212>PRT
<213>Chlamydia trachomatis
<400>665
Tyr Gly Arg Ala Ser Phe Glu Tyr Ser Asp Val Cys His Ser Arg Asp
  1               5                  10                  15
His Arg Cys Ser Ser Arg Asn Cys Ser Lys Phe Trp His Tyr Arg Ser
             20                  25                  30
Tyr Phe Leu Phe Cys Ser Glu Pro Cys Met Thr Thr Asn Ser Thr Gln
         35                  40                  45
Asp Thr Leu Tyr Leu Ser Leu His Gly Gly Ile Asp Ser Ala Ile Pro
     50                  55                  60
Tyr Pro Val Arg Arg Val Glu Gln Leu Leu Gln Phe Ser Phe Leu Pro
 65                  70                  75                  80
Glu Leu Gln Phe Gln Asn Ala Ala Val Lys Gln Arg Ile Gln Arg Leu
                 85                  90                  95
Cys Tyr Arg Glu Glu Lys Arg Leu Ala Val Ser Ser Leu Ala Lys Trp
            100                 105                 110
Leu Gly Gln Leu His Lys Gln His Leu Arg Ala Pro Lys Asn Pro Pro
        115                 120                 125
Val Ala Ile Cys Trp Ile Asn Ser Tyr Val Gly Tyr Gly Val Phe Ala
    130                 135                 140
Arg Glu Ser Ile Pro Ala Trp Ser Tyr Ile Gly Glu Tyr Thr Gly Ile
145                 150                 155                 160
Leu Arg Arg Arg Gln Ala Leu Trp Leu Asp Glu Asn Asp Tyr Cys Phe
                165                 170                 175
Arg Tyr Pro Val Pro Arg Tyr Ser Phe Arg Tyr Phe Thr Ile Asp Ser
            180                 185                 190
Gly Met Gln Gly Asn Val Thr Arg Phe Ile Asn His Ser Asp Asn Pro
        195                 200                 205
Asn Leu Glu Ala Ile Gly Ala Phe Glu Asn Gly Ile Phe His Ile Ile
    210                 215                 220
Ile Arg Ala Ile Lys Asp Ile Leu Pro Gly Glu Glu Leu Cys Tyr His
225                 230                 235                 240
Tyr Gly Pro Leu Tyr Trp Lys His Arg Lys Lys Arg Glu Glu Phe Val
                245                 250                 255
Pro Gln Glu Glu
            260
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<213>Chlamydia trachomatis
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Ile Gln Glu Thr Ser Ile Met Gln Leu Thr Ser Gln Ala Phe Ser Tyr
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Gly Arg Pro Ile Pro Lys Lys Tyr Ser Cys Gln Gly Val Gly Ile Ser
             20                  25                  30
Pro Pro Leu Ser Phe Ser Asp Val Pro Arg Glu Ala Lys Ser Leu Val
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          35                  40                  45
Leu Ile Val Glu Asp Pro Asp Val Pro Pro Ser Val Arg Glu Asp Gly
      50                  55                  60
Leu Trp Ile His Trp Ile Val Tyr Asn Leu Ser Pro Val Val Ser Asn
 65                  70                  75                  80
Leu Ala Glu Gly Ala Gln Ile Phe Ala Val Gln Gly Leu Asn Thr Ala
                 85                  90                  95
Gly Glu Ile Gly Tyr Cys Pro Pro Cys Pro Pro Asp Ala Lys His Arg
            100                 105                 110
Tyr Tyr Phe Tyr Ala Tyr Ala Leu Asp Val Val Leu Ser Asp Glu Glu
        115                 120                 125
Gly Val Thr Lys Glu Gln Leu Leu Glu Ala Met Asp Gly His Ile Ile
    130                 135                 140
Ala Thr Ala Glu Leu Met Gly Thr Tyr Glu Lys Asp
145                 150                 155
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<212>PRT
<213>Chlamydia trachomatis
<400>667
Met Leu Gln Phe Leu Lys Gln Ile Asn His Phe Leu Thr Ser Phe Cys
  1                 5                  10                  15
Val Phe Pro Leu Ile Leu Cys Leu Gly Gly Ile Leu Thr Trp Lys Leu
             20                  25                  30
Arg Gly Leu Gln Phe Thr Ser Leu Gly Met Ser Phe Arg Leu Met Leu
         35                  40                  45
Asn Asn Gln Gln Glu Gln Ala Gly Ala Glu Gly Glu Gly Val Ser Arg
     50                  55                  60
Tyr Glu Ala Val Ala Gly Met Leu Ala Gly Asn Phe Gly Thr Gly Asn
 65                  70                  75                  80
Ile Ala Gly Met Ala Ile Ala Val Ala Ser Gly Gly Pro Gly Ala Leu
                 85                  90                  95
Leu Trp Ile Trp Ile Val Thr Leu Phe Ala Ala Ile Val Gln Tyr Ala
            100                 105                 110
Gly Ala Phe Leu Gly Cys Lys Tyr Arg Gln Phe Gln Lys Glu Ser Gln
        115                 120                 125
Glu Tyr Ile Gly Gly Pro Ile Ala Cys Leu Gly Tyr Lys Met Gly Ser
    130                 135                 140
Arg Phe Xaa Ala Val Ala Xaa Cys Val Ala Ser Leu Ile Thr Ala Phe
145                 150                 155                 160
Ser Ala Gly Ser Leu Val Gln Val Asn Ser Ile Ile Ser Leu Cys Ala
                165                 170                 175
Asp Gly Val Ser Ala Lys Ile Ala Val Gly Ile Leu Leu Ala Leu Ser
            180                 185                 190
Val Tyr Pro Ile Leu Ala Gly Gly Asn Thr Arg Val Leu Arg Phe Ser
        195                 200                 205
Ala Lys Ala Ile Pro Phe Val Ala Gly Phe Tyr Phe Leu Phe Ser Val
    210                 215                 220
Ile Val Leu Ala Met His Cys Asp Lys Ile Leu Pro Ala Leu Gln Leu
225                 230                 235                 240
Val Phe Ser Ser Ala Leu Gly Val Lys Ala Gly Ile Ala Gly Val Gly
                245                 250                 255
Gly Tyr Thr Leu Gly Gln Val Ile Ser Thr Gly Leu Asn Arg Ala Ile
            260                 265                 270
Met Ala Thr Asp Gly Gly Ser Gly Met Val Ser Ile Leu Gln Ser Asn
        275                 280                 285
Ser Lys Ser Thr Asn Pro Val Thr Asp Gly Leu Val Thr Leu Leu Pro
    290                 295                 300
Pro Val Ile Val Ala Val Val Cys Ser Ile Thr Met Met Val Leu Leu
305                 310                 315                 320
Val Thr Gly Ala Tyr Asp Ser Gly Glu Leu Gly Val Leu Met Val Met
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SEQUENCE LISTING

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                325                 330                 335
Asn Ala Phe Lys Ser Ser Leu Gly Met Leu Gly Gly Ser Val Val Leu
            340                 345                 350
Ile Ser Met Ile Leu Phe Gly Tyr Thr Thr Ala Leu Ser Trp Phe Ala
        355                 360                 365
Cys Ala Glu Lys Ser Leu Glu Tyr Met Ile Pro Gly Lys Arg Ala Asn
    370                 375                 380
Leu Leu Leu Lys Ala Ile Tyr Ile Ala Ile Ile Pro Met Gly Gly Val
385                 390                 395                 400
Leu Gly Met Gln Phe Ile Trp Ala Leu Ser Asp Leu Gly Phe Cys Gly
                405                 410                 415
Met Val Ile Phe Asn Ser Ile Ser Leu Ile Ala Leu Phe Arg Glu Val
            420                 425                 430
Ile Ala Thr Arg Tyr Glu Val Ala Leu Leu Arg Lys Glu Ala Gln Ala
        435                 440                 445
Gln Ser Asp Pro Leu Arg Gln
    450                 455
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Cys Leu Leu Leu Leu Ile Ser Leu Leu Leu Leu Trp Leu Trp Leu Arg
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             20                  25                  30
His Leu Leu Gln Ala Leu Ala Glu Asp Pro Ala Leu Ile Ala Gly Met
         35                  40                  45
Lys Lys Met Gln Gly Arg Asp Trp Val Trp Asn Ile Phe Ile Thr Glu
     50                  55                  60
Leu Ser Lys Val Phe Ser Gln Ala Ala Ser Leu Gly Leu Ser Ala Leu
 65                  70                  75                  80
Gln Thr Phe Ala Ala Phe Ala Ser Thr Leu Gly Leu Asp Ser Gly Thr
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Val Ile Gln Asn Pro Ala Ile
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             20                  25                  30
Leu Ser Ser Cys Cys Ala Asn Ser Tyr Gly Ser Thr Leu Ala Lys Asn
         35                  40                  45
Thr Ala Glu Ile Lys Glu Glu Ser Val Ile Leu Arg Glu Lys Pro Asp
     50                  55                  60
Ala Gly Cys Lys Lys Lys Ser Ser Cys Tyr Leu Arg Lys Phe Phe Ser
 65                  70                  75                  80
Arg Lys Lys Pro Lys Glu Lys Thr Glu Pro Val Leu Pro Asn Phe Lys
                 85                  90                  95
Ser Tyr Ala Asp Pro Met Thr Asp Ser Glu Arg Lys Asp Leu Ser Phe
            100                 105                 110
Val Val Ser Ala Ala Ala Asp Lys Ser Ser Ile Ala Leu Ala Met Ala
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Gln Gly Glu Ile Lys Gly Ala Leu Ser Arg Ile Arg Glu Ile His Pro
    130                 135                 140
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Leu Ala Phe Val Thr Ser Ser Cys Arg Arg Ser Cys Phe Asn Cys Trp
145                 150                 155                 160
Asn Glu Lys Asp Ala Arg Thr Gly Leu Gly Leu Glu Tyr Leu Tyr His
                165                 170                 175
Arg Ile Lys Gln Ser Phe Phe Ser Ser Ser Ile Phe Arg Ala Phe Ser
            180                 185                 190
Val Ala Asp Val Cys Arg Val Arg Val Asp Leu Arg Ile Arg Leu Gly
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Asp Arg Tyr Leu Asn Cys
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Tyr Pro Glu Leu Leu Trp Leu Val Glu Pro Ser Ser Thr Gly Ala Ser
         35                  40                  45
Leu Lys Ser Pro Ser Gly Ala Ile Phe Ser Pro Thr Leu Phe Gln Lys
     50                  55                  60
Lys Val Pro Ala Phe Asp Ile Ala Val Arg Ser Leu Ile His Leu His
 65                  70                  75                  80
Leu Leu Ile Gln Gly Ser Arg Gln Ala Tyr Ala Gln Leu Ile Gln Leu
                85                  90                  95
Gln Thr Ser Glu Ser Pro Leu Thr Phe Lys Gln Phe Leu Ala Leu His
            100                 105                 110
Lys Gln Leu Thr Leu Phe Leu Asn Ser Pro Lys Glu Phe Tyr Asp Ser
        115                 120                 125
Val Lys Val Leu Glu Thr Ala Ile Val Leu Arg His Leu Gly Cys Ser
    130                 135                 140
Thr Lys Ala Val Ala Ala Phe Lys Pro Tyr Phe Ser Glu Met Gln Arg
145                 150                 155                 160
Glu Thr Phe Tyr Thr Lys Ala Leu His Val Leu His Thr Phe Pro Glu
                165                 170                 175
Leu Ser Pro Ser Phe Ala Arg Leu Ser Pro Glu Gln Lys Thr Leu Phe
            180                 185                 190
Phe Ser Leu Arg Lys Leu Ala Asn Tyr Asp Glu Leu Leu Ser Leu Thr
        195                 200                 205
Asn Thr Pro Ser Phe Gln Leu Leu Ser Ala Gly Arg Ser Gln Arg Ala
    210                 215                 220
Leu Leu Ala Leu Asp Leu Tyr Leu Tyr Ala Leu Asp Ser Cys Gly Glu
225                 230                 235                 240
Gln Gly Met Ser Ser Gln Phe His Thr Asn Phe Ala Pro Leu Gln Ser
                245                 250                 255
Met Leu Gln Gln Tyr Ala Thr Val Glu Glu Ala Phe Ser Arg Tyr Phe
            260                 265                 270
Thr Tyr Arg Ala Asn Arg Leu Gly Phe Asp Gly Ser Ser Arg Ser Glu
        275                 280                 285
Met Ala Leu Val Arg Met Ala Thr Leu Met Asn Leu Ser Pro Ser Glu
    290                 295                 300
Ala Ala Ile Leu Thr Thr Ser Phe Lys Thr Leu Pro Thr Glu Glu Ala
305                 310                 315                 320
Asp Thr Leu Val Asn Ser Phe Tyr Thr Asn Lys Gly Asp Ser Leu Ala
                325                 330                 335
Leu Ser Leu Arg Gly Leu Pro Thr Leu Val Ser Glu Leu Thr Arg Thr
            340                 345                 350
Ala Arg Gly Asn Thr Asn Ala Glu Ala Arg Ser Gln Gln Ile Tyr Ala
        355                 360                 365
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Sheet 2 of 2

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Thr Thr Leu Ser Leu Val Ala Lys Ser Leu Lys Ala His Lys Glu Met
    370                 375                 380
Leu Asn Lys Gln Ile Leu Ser Lys Glu Ile Val Leu Asp Phe Ser Glu
385                 390                 395                 400
Thr Ala Ala Ser Cys Gln Gly Leu Asp Ile Phe Ser Glu Asn Val Ala
                405                 410                 415
Val Gln Ile His Leu Asn Gly Thr Val Ser Ile His Leu
            420                 425
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Val Phe Met Pro Glu Ala Pro Lys Leu Gly Pro Leu Ile Pro Ala Arg
        35                  40                  45
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Ser Ala Ile Cys Ser
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Glu His Ile Ala Asp Ser Val Ala Ala Gly Val Ser Arg Leu Ser Leu
        35                  40                  45
Asp Phe Cys Leu Pro Ile Thr Phe Ser Val Ile Thr Ala Pro Asn Met
    50                  55                  60
Glu Ala Ala Trp Glu Arg Ala Gly Ile Lys Gly Pro Asn Leu Gly Ala
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Ser Gly Met Lys Thr Ala Leu Glu Met Ala Ser Leu Phe Ser Leu Ile
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Gly Lys Glu

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            20                  25                  30
Ala Ala Met Asp Leu Met Arg Leu Ala Gly Met Gln Pro Cys Gly Ile
        35                  40                  45
Phe Ala Glu Leu Val Asn Pro Asp His Ser Met Met Arg Gln Gln Gln
    50                  55                  60
Val Leu Ala Phe Ala Glu Gln His Asp Leu Thr Val Ile Thr Val Asp
65                  70                  75                  80
Asp Leu Ile Thr Tyr Arg Tyr Thr Tyr Asp Ser Leu Val Thr Lys Ile
                85                  90                  95
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Ser Ser Ala Arg Leu Pro Thr Lys Tyr Gly Asp Phe Ser Ile Tyr Val
100 105 110
Tyr Glu Ser Ile Ile Asp Gly Thr Gln His Phe Ala Leu Val Lys Gly
115 120 125
Asp Ile His Glu Gln Glu Ala Val Pro Val Arg Val His Ser Glu Cys
130 135 140
Leu Thr Gly Asp Ile Leu Gly Ser Cys Arg Cys Asp Cys Gly Ala Gln
145 150 155 160
Leu Asp Met Ala Met Arg Tyr Ile Ala Glu Glu Gly Leu Gly Val Ile
165 170 175
Val Tyr Leu Arg Gly Gln Glu Gly Arg Gly Ile Gly Phe Gly His Lys
180 185 190
Ile Arg Ala Tyr Ala Leu Gln Asp Leu Gly Tyr Asp Thr Val Asp Ala
195 200 205
Asn Leu Gln Leu Gly Phe Pro Ile Asp Ala Arg Glu Tyr Gly Met Ala
210 215 220
Ala Gln Val Leu Lys Asp Leu Gln Leu Thr Ser Val Arg Leu Ile Thr
225 230 235 240
His Asn Pro Arg Lys Phe Phe Glu Leu Gln Arg Leu Gly Ile His Val
245 250 255
Leu Asp Arg Ile Ile Leu Pro Val Ser Ile Ser Thr Glu Asn Glu Gly
260 265 270
Tyr Leu Arg Thr Lys Lys Glu Arg Met Gly His Trp Leu Asp Leu Pro
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Val Leu Asp Asp Val Glu Glu Glu Tyr Glu Thr Val Glu Arg Met Ser
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Cys Arg
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35 40 45
Thr Glu Lys Met Ser Phe Leu Leu Ser His Thr Thr Gly Ile Val Cys
50 55 60
Ala Ser Leu Ser Arg Glu Gln Ala Lys Ser Leu Asp Leu Pro Ala Met
65 70 75 80
Val Gln Asp Asn Gln Cys Ala Phe Lys Thr Ala Phe Thr Val Ser Val
85 90 95
Asp Ala Ser Ser Gly Val Thr Thr Gly Val Ser Ala Ser Asp Arg Thr
100 105 110
Arg Thr Val Gln Leu Leu Ala Asp Pro Ala Ala Thr Ala Ser Pro Leu
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Phe Asp Gln Gly Met Phe Ser Leu
130 135
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Sequence Listing

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Asp Gly Gln Thr Ala Asp Arg Gly Gly Ser Ser Gln Trp Ile Ser Gly
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Glu Leu Ala Arg Ala Asp Val Gly Lys Leu Arg Ala Glu Ser Gln Ala
 65                  70                  75                  80
Ile Ile Val Gly Ala Arg Thr Val Cys Leu Asp Asn Pro Arg Leu Ser
                 85                  90                  95
Ala Arg Phe Pro His Gly Asp Leu Tyr Glu Arg Gln Pro Leu Arg Val
            100                 105                 110
Val Val Asp Ser Arg Gly Thr Val Pro Leu Glu Ser Arg Val Phe Asp
        115                 120                 125
Leu Ser Ser Gly Ser Thr Leu Phe Ala Thr Thr Gln Gln Cys Pro Lys
    130                 135                 140
Glu Tyr Ile Gln Lys Leu Lys Asp Leu Gly Val Glu Val Trp Glu Ser
145                 150                 155                 160
Ser Ser His Gln Val Asp Leu Lys Gly Leu Leu Arg Tyr Leu Ala Glu
                165                 170                 175
Arg Gly Cys Leu Gln Val Leu Val Glu Gly Gly Ala Gln Leu His Ser
            180                 185                 190
Ala Phe Trp Gln Gln Lys Leu Val Asn Ala Gly Val Ile Tyr Trp Gly
        195                 200                 205
Pro Lys Phe Leu Gly Asp Gln Gly Gln Pro Met Leu Arg Asp Leu Gln
    210                 215                 220
Leu Ser Leu Val Thr Ala Glu His Val Arg Ile Thr Glu Thr Ser Leu
225                 230                 235                 240
Val Arg Asp Ser Val Lys Thr Cys Phe Glu Cys Leu Glu Gln Glu Ser
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Val Asp Lys Lys Gly
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             20                  25                  30
Tyr Leu Ile Phe Gln Val Glu Tyr Met Glu Val Leu Ser Glu Gln Gln
          35                  40                  45
Leu Phe Phe Met Arg Lys Ala Val Ala Leu Gly Glu Lys Gly Arg Ile
     50                  55                  60
Phe Ala Pro Pro Asn Pro Trp Val Gly Cys Val Ile Val Lys Asn Gly
 65                  70                  75                  80
Cys Val Ile Gly Glu Gly Trp His Gln Gly Ile Gly Ser Pro His Ala
                 85                  90                  95
Glu Val Cys Ala Val Gln Asp Gln Lys Cys Ser Leu Glu Gly Ala Glu
            100                 105                 110
Val Tyr Val Thr Leu Glu Pro Cys Cys His Phe Gly Arg Thr Pro Pro
        115                 120                 125
Cys Val Asp Leu Leu Ile Lys Ser Lys Val Ala Ala Val Tyr Val Gly
    130                 135                 140
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Lys Gln Gln Gly Phe Pro Phe Met Leu Gly
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SEQUENCE LISTING

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Gln Leu Lys Ala Asp Ser Glu Ala Leu Leu Ala Lys Arg Lys Val Leu
        35                  40                  45
Ser Gly Gln Ile His Lys Ala Lys Val Ala Asn Glu Asn Ala Asp Ala
    50                  55                  60
Leu Ile Gln Glu Val Asn Thr Ile Ala Asp Gln Leu Val Ala Phe Glu
65                  70                  75                  80
Thr Thr Leu Gln Glu Gln Glu Ala Leu Leu Glu Asp Leu Met Ala Arg
                85                  90                  95
Leu Pro Asn Tyr Pro Asp Glu Asp Val Pro Val Ser Pro Asp Lys Thr
            100                 105                 110
Gly Asn Gln Met Ile Lys Ser His Gly Glu Val Pro Thr Phe Pro Phe
        115                 120                 125
Pro Pro Lys His His Met Gln Leu Asn Glu Ala Leu Gln Ile Leu Asp
    130                 135                 140
Phe Lys Leu Pro Ala Lys Thr Thr Gly Ser Gly Trp Pro Ala Tyr Cys
145                 150                 155                 160
Asn Glu Gly Val Leu Leu Glu Trp Ala Leu Leu Thr Tyr Leu Leu Asn
                165                 170                 175
Lys Gln Gln Ala His Gly Phe Gln Leu Trp Leu Pro Pro Leu Leu Val
            180                 185                 190
Lys Arg Asp Ile Leu Phe Gly Ser Gly Gln Ile Pro Lys Phe Asp Gly
        195                 200                 205
Gln Tyr Tyr Arg Val Glu Asp Gly Asp Arg Ser Leu Phe Leu Ile Pro
    210                 215                 220
Thr Ala Glu Val Val Leu Asn Gly Phe His Ser Gln Glu Ile Leu Asn
225                 230                 235                 240
Glu Gln Asp Leu Pro Leu Cys Tyr Ala Ala Phe Thr Pro Cys Phe Arg
                245                 250                 255
Arg Glu Ala Gly Ala Gly Gly Ala His Glu Arg Gly Leu Val Arg Val
            260                 265                 270
His Gln Phe His Lys Val Glu Met Phe Ala Phe Thr Thr Pro Glu Gln
        275                 280                 285
Glu Glu Val Val Tyr Gln Lys Met Leu His Val Val Glu Glu Ile Leu
    290                 295                 300
Ser Glu Leu Gln Leu Pro Tyr Gln Leu Ser Leu Leu Ser Thr Gly Asp
305                 310                 315                 320
Met Ser Phe Thr Ala Lys Lys Thr Ile Asp Ala Glu Val Trp Leu Pro
                325                 330                 335
Gly Gln Lys Ala Phe Tyr Glu Val Ser Ser Ile Ser Lys Cys Gly Asp
            340                 345                 350
Phe Gln Ala Arg Arg Ser Glu Thr Arg Tyr Arg Asp Ala Gln Gly Lys
        355                 360                 365
Leu His Phe Val Asn Thr Leu Asn Gly Ser Gly Leu Ala Thr Pro Arg
    370                 375                 380
Leu Leu Val Ala Ile Leu Glu Asn Tyr Gln Gln Ala Asp Gly Ser Val
385                 390                 395                 400
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            20                  25                  30
Thr His Arg Asn Met Leu Gln Glu Lys Lys Glu Ile Glu Thr Asn Pro
        35                  40                  45
Glu Gln Glu Arg Ile Glu Leu Ala Val Leu Tyr Ala Asn Gln Gly Phe
    50                  55                  60
Gln Glu Pro Leu Ile Ser Gln Met Leu Asp Phe Val Cys Ser Asp Ser
65                  70                  75                  80
Ser Leu Leu Leu Ser Thr Met Leu Arg Glu Glu Leu His Ile Gln Leu
                85                  90                  95
Glu Asp Tyr Pro His Pro Leu Lys Gln Gly Asn Val Lys Ala Leu Gly
            100                 105                 110
Gly Ile Leu Gly Leu Leu Leu Phe Ala Pro Ile Thr Leu Ala Val Ser
        115                 120                 125
Tyr Thr Ile Ala Ala Ile Leu Ala Ser Phe Met Ile Gly Val Leu Phe
    130                 135                 140
Ala Val Lys Thr Arg Leu Ile Lys Asn Ala Ile Thr Pro Ala Ile Val
145                 150                 155                 160
Trp Gly Val Gly Met Phe Ile Thr Ala Ile Ser Leu Cys Cys Ser Leu
                165                 170                 175
Ile Arg Leu Phe
            180
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Leu Ser Asp Phe Phe Glu Ser Gly Met Ala Glu Glu Asn Ser Pro Leu
        35                  40                  45
Leu Ser Gln Lys Asn Arg Arg Leu Ser Gln Asn Leu Thr Leu Lys Ser
    50                  55                  60
Ala Tyr Ile Ser Leu Ala Leu Tyr Leu Gly Ser Leu Leu Ser His Trp
65                  70                  75                  80
Ile Gly Tyr Gln Ala Leu Ser Ser Leu Leu Leu Ile Leu Thr Phe Phe
                85                  90                  95
Leu Ala Gly Thr Pro Ala Leu Ile Lys Ser Phe Glu Asp Ile Leu Asp
            100                 105                 110
Arg Thr Val Asn Ile Asp Ile Leu Met Thr Ser Ala Ala Phe Gly Ser
        115                 120                 125
Ile Phe Ile Gly Gly Ala Leu Glu Gly Ala Leu Leu Leu Val Leu Phe
    130                 135                 140
Ala Ile Ser Glu Ser Leu Gly Ala Met Val Ser Gly Lys Ala Lys Ser
145                 150                 155                 160
Thr Leu Ala Ser Leu Lys His Leu Ala Pro Thr Val Ala Trp Val Val
                165                 170                 175
Gln Gln Asp Gly Ser Leu Gln Lys Val Leu Val Gln Asn Val Lys Ile
            180                 185                 190
Gly Glu Ile Ile Arg Val Lys Ser Gly Glu Val Val Pro Leu Asp Gly
        195                 200                 205
Lys Ile Ile His Gly Ala Ser Ser Ile Asn Leu Met His Leu Thr Gly
    210                 215                 220
Glu Lys Ile Pro Lys Ser Cys Gly Ile Gly Asp Thr Ile Pro Ala Gly
225                 230                 235                 240
Ala His Asn Leu Glu Gly Ser Phe Asp Leu Gln Val Leu Arg Ile Gly
                245                 250                 255
Ala Glu Ser Thr Ile Ala His Ile Ile Asn Leu Val Val Gln Ala Gln
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Tyr Ala Leu Thr Ile Phe Ala Ile Ser Ala Cys Ile Ala Ile Gly Gly
    290                 295                 300
Ser Leu Phe Thr Thr Leu Pro Phe Leu Gly Pro Asp Gly Ala Phe Tyr
305                 310                 315                 320
Arg Ala Leu Ala Phe Leu Ile Ala Ala Ser Pro Cys Ala Leu Ile Ile
                325                 330                 335
Ala Ile Pro Ile Ala Tyr Leu Ser Ala Ile Asn Ala Cys Ala Lys His
            340                 345                 350
Gly Val Leu Leu Lys Gly Gly Val Val Leu Asp Arg Leu Val Ser Cys
        355                 360                 365
Asn Ser Val Val Met Asp Lys Thr Gly Thr Leu Thr Thr Gly Asp Leu
    370                 375                 380
Thr Cys Ser Gly Cys Glu Asp Phe Gly Pro Glu Ser Pro Leu Phe Tyr
385                 390                 395                 400
Ser Cys Val Leu Ala Met Glu Gln Ser Ser Ser His Pro Ile Ala Gln
                405                 410                 415
Ala Ile Val Asn Tyr Leu Thr Glu Lys Gln Val Arg Ser Leu Pro Ala
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Thr Gln Cys Thr Thr Ile Pro Gly Glu Gly Val Arg Glu Asn Leu Thr
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         35                  40                  45
Gly Tyr Pro Val Cys Met Leu Thr Gly Asp His Arg Ile Ser Ala Glu
     50                  55                  60
Asn Thr Ala Arg Leu Leu Gly Ile Asp Glu Val Phe Tyr Asp Leu Thr
 65                  70                  75                  80
Pro Asp Asn Lys Leu Ser Lys Ile Gln Glu Leu Ala Lys Ser Arg Gln
                 85                  90                  95
Ile Met Met Ile Gly Asp Gly Ile Asn Asp Ala Pro Ala Leu Ala Gln
            100                 105                 110
Ala Thr Val Gly Ile Ala Met Gly Glu Ala Gly Ser Ala Thr Ala Ile
        115                 120                 125
Glu Ala Ala Asp Val Val Leu Leu Asn Gln Gly Leu Ser Ser Leu Pro
    130                 135                 140
Trp Leu Ile Asp Lys Ala Lys Lys Thr Arg Arg Ile Val Ser Gln Asn
145                 150                 155                 160
Leu Ala Leu Ala Leu Ala Ile Ile Leu Phe Ile Ser Gly Pro Ala Ser
                165                 170                 175
Met Gly Val Ile Pro Leu Trp Leu Ala Val Ile Leu His Glu Gly Gly
            180                 185                 190
Thr Val Ile Val Gly Leu Asn Ala Leu Arg Leu Leu Lys Asn Thr
        195                 200                 205
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Asp Pro Ser Ser Met Leu Val His Thr Ser Arg Gly Leu Phe Ser Ala
        35                  40                  45
Lys Ser Lys Lys Gln Leu Asp His Phe Ala Leu Gly Trp Cys Ala Tyr
    50                  55                  60
Phe Ile Cys Leu Tyr Val Asp Tyr His Gln Phe Lys Arg Trp Ala Trp
65                  70                  75                  80
Val Leu Tyr Ser Leu Ile Leu Phe Ser Leu Ile Gly Leu Phe Phe Val
                85                  90                  95
Pro Ala Val Gln Asn Val His Arg Trp Tyr Arg Ile Pro Ile Ile Asn
            100                 105                 110
Leu Ser Val Gln Pro Ser Glu Tyr Ala Lys Leu Ala Val Val Ile Met
        115                 120                 125
Leu Ser Tyr Ile Leu Glu Met Arg Lys Ala Arg Ile Ser Ser Lys Thr
    130                 135                 140
Thr Ala Phe Val Ala Cys Ile Ile Val Gly Ile Pro Phe Leu Leu Ile
145                 150                 155                 160
Leu Lys Glu Pro Asp Leu Gly Thr Ala Leu Val Leu Cys Pro Ile Ala
                165                 170                 175
Leu Thr Ile Phe Tyr Leu Gly Asn Ile Tyr Pro Pro Leu Val Lys Val
            180                 185                 190
Cys Ser Val Leu Val Ala Leu Gly Met Phe Cys Ser Leu Leu Ile Phe
        195                 200                 205
Ser Gly Ile Ile Pro His Asp Lys Val Lys Pro Tyr Ala Leu Lys Val
    210                 215                 220
Leu Lys Glu Tyr Gln Tyr Glu Arg Leu Ser Pro Ser Asn His His Gln
225                 230                 235                 240
Arg Ala Ser Leu Ile Ser Ile Gly Val Gly Gly Leu Lys Gly Gln Gly
                245                 250                 255
Trp Lys Ser Gly Glu Phe Ala Gly Arg Gly Trp Leu Pro Tyr Gly Tyr
            260                 265                 270
Thr Asp Ser Val Phe Pro Ala Ile Gly Glu Glu Phe Gly Leu Leu Gly
        275                 280                 285
Leu Leu Phe Val Leu Trp Leu Phe Tyr Asn Leu Val Cys Phe Gly Cys
    290                 295                 300
Arg Thr Val Ala Val Ala Val Asp Asp Phe Gly Arg Phe Leu Ala Gly
305                 310                 315                 320
Gly Val Thr Val His Leu Val Met His Val Leu Ile Asn Val Ser Met
                325                 330                 335
Met Ser Gly Leu Leu Pro Ile Thr Gly Val Pro Leu Val Leu Ile Ser
            340                 345                 350
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            20                  25                  30
Ile Thr Thr Arg Glu Gln Thr Ala Gly Arg Gly Lys Phe Gly Arg Val
        35                  40                  45
Trp His Ser Thr Asp Gln Asp Leu Leu Ala Ser Phe Cys Phe Phe Leu
    50                  55                  60
Ser Val Asn Asn Val Asp Ser Ala Leu Leu Phe Arg Ile Gly Thr Glu
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 65                  70                  75                  80
Ala Val Met Arg Leu Gly Glu Ser Leu Gly Ile Gln Glu Ala Val Met
                85                  90                  95
Lys Trp Pro Asn Asp Val Leu Val Gln Gly Gln Lys Leu Ser Gly Val
            100                 105                 110
Leu Cys Glu Thr Ile Pro Val Lys Thr Gly Thr Cys Val Ile Ile Gly
        115                 120                 125
Ile Gly Val Asn Gly Asn Val Gly Ala Asp Glu Leu Leu Gly Ile Asn
    130                 135                 140
Gln Pro Ala Thr Ser Leu Gln Glu Leu Ile Gly Arg Pro Val Asp Met
145                 150                 155                 160
Glu Glu Gln Leu Lys Arg Leu Thr Lys Glu Ile Lys His Leu Ile Gln
                165                 170                 175
Thr Leu Pro Leu Trp Gly Arg Glu
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             20                  25                  30
Asn Gly Arg Val Ala Thr Gly Pro Phe Val Thr Val Asp Glu Glu Phe
         35                  40                  45
Asp Ser Val Glu Val Gly Gly Gln Arg Ile Gly Ala Glu Lys Lys Val
     50                  55                  60
Tyr Phe Met Val His Lys Pro Leu Gly Tyr Leu Cys Ser Ser Glu Arg
 65                  70                  75                  80
Lys Phe Pro Gly Ser Lys Leu Val Ile Asp Leu Leu Ser His Cys Pro
                85                  90                  95
Tyr Arg Leu Phe Thr Val Gly Arg Leu Asp Lys Glu Thr Ser Gly Leu
            100                 105                 110
Ile Leu Val Thr Asn Asp Gly Glu Phe Ala Asn Arg Val Ile His Pro
        115                 120                 125
Ser Phe Gly Ile Thr Lys Glu Tyr Leu Leu Lys Val Ser Arg Asp Val
    130                 135                 140
Thr Ala Arg Asp Leu Glu Thr Leu Met Ala Gly Thr Val Ile Asp Gly
145                 150                 155                 160
Lys Val Val Arg Pro Val Ser Val Lys Lys Val Arg Arg Gly Thr Ile
                165                 170                 175
Lys Ile Ile Val Asn Glu Gly Lys Lys His Glu Ile Arg Leu Phe Ala
            180                 185                 190
Glu Ala Ala Gly Leu Gln Leu Leu Glu Leu Lys Arg Ile Arg Ile Gly
        195                 200                 205
Ser Leu Val Leu Gly Gly Leu Pro Tyr Gly Lys Tyr Arg Glu Leu Thr
    210                 215                 220
Asp Ser Glu Leu Asp Ser Cys Leu Ser Gly Lys Ser Val Ala Leu Val
225                 230                 235                 240
Ala

<210>684
<211>264
<212>PRT
<213>Chlamydia trachomatis
<400>684
Met Thr Leu Leu Ile Leu Leu Arg His Gly Gln Ser Val Trp Asn Gln
  1                 5                  10                  15
Lys Asn Leu Phe Thr Gly Trp Val Asp Ile Pro Leu Ser Gln Gln Gly
             20                  25                  30
```

```
Ile Gln Glu Ala Ile Ala Ala Gly Glu Ser Ile Lys His Leu Pro Ile
          35                  40                  45
Asp Cys Ile Phe Thr Ser Thr Leu Val Arg Ser Leu Met Thr Ala Leu
      50                  55                  60
Leu Ala Met Thr Asn His Ser Ser Gln Lys Val Pro Tyr Ile Val His
 65                  70                  75                  80
Glu Glu Arg Pro Asp Met Ser Arg Ile His Ser Gln Lys Glu Met Glu
                 85                  90                  95
Gln Met Ile Pro Leu Phe Gln Ser Ser Ala Leu Asn Glu Arg Met Tyr
            100                 105                 110
Gly Glu Leu Gln Gly Lys Asn Lys Gln Glu Val Ala Val Gln Phe Gly
        115                 120                 125
Glu Glu Gln Val Lys Leu Trp Arg Arg Ser Tyr Arg Ile Ala Pro Pro
    130                 135                 140
Gln Gly Glu Ser Leu Phe Asp Thr Gly Gln Arg Thr Leu Pro Tyr Phe
145                 150                 155                 160
Gln Glu Arg Ile Phe Pro Leu Leu Gln Gln Gly Lys Asn Ile Phe Ile
                165                 170                 175
Ser Ala His Gly Asn Ser Leu Arg Ser Leu Ile Met Asp Leu Glu Lys
            180                 185                 190
Leu Ser Glu Glu Gln Val Leu Ser Leu Glu Leu Pro Thr Gly Gln Pro
        195                 200                 205
Ile Val Tyr Glu Trp Thr Gly Gln Lys Phe Thr Lys His Ala Pro Ser
    210                 215                 220
Leu Gly Lys Gln Pro Thr Ser His Pro Ser Phe Arg Asn Gly Glu Arg
225                 230                 235                 240
Gly Phe Ser Thr Leu Arg Arg Arg Ile Phe Val Gln Arg Lys Tyr Leu
                245                 250                 255
His Ser Asp Phe Thr Ser Arg Ser
            260
<210>685
<211>387
<212>PRT
<213>Chlamydia trachomatis
<400>685
Leu Tyr Thr Asn Gly Arg Asp Lys Asn Ser Arg Asn Thr Leu Leu Leu
  1                 5                  10                  15
Leu Val Asn Asn Gln Gln Ala Ile Pro Pro Ser Glu Met Val Lys Glu
             20                  25                  30
Ala Phe Gln Arg Tyr Ala Asp Val Phe Ser Tyr Ser Ala Asn Thr Ser
         35                  40                  45
Ile Leu Thr Leu Gln Ala Glu Ala Glu Ala Ser Ala Arg Lys Leu Thr
     50                  55                  60
Gly Cys Gln Glu Lys Ala Phe Thr Phe His Phe Ile Leu His Tyr Pro
 65                  70                  75                  80
Asn Val Thr Ala Ile Ile Val Ala Ala Leu Leu Glu Asn Gln Asn Ala
                 85                  90                  95
Phe Gln Gly Arg Asn His Leu Leu Val Pro Ser Cys Glu Gln Gln Phe
            100                 105                 110
Ile Ile Asn Ala Leu Cys Arg Arg Gln Asn Leu Gly Thr Thr Tyr Asp
        115                 120                 125
Trp Val Thr Ser Lys Asn Gly Arg Val Lys Glu Ser Asp Leu Ala Glu
    130                 135                 140
Ala Leu Ser Pro Arg Thr Leu Leu Phe Ser Ile Ser Ala Ala Asn Gly
145                 150                 155                 160
Met Thr Gly Phe Leu Glu Ala Ile Pro Glu Leu Ala Ala Leu Cys Lys
                165                 170                 175
Glu Arg Gly Val Ile Phe His Ile Asp Leu Ser Asp Ile Leu Gly Arg
            180                 185                 190
Cys Ala Leu Pro Ala Glu Leu Tyr Gln Ala Asp Ile Leu Thr Phe Ser
        195                 200                 205
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Ser Gln Ser Leu Gly Gly Ile Gly Pro Ser Gly Ala Met Phe Ile Ser
    210                 215                 220
Pro Ala Leu Thr Lys Tyr Phe Ser Leu Trp Leu Pro Ser Asn Pro Gln
225                 230                 235                 240
Val Pro Thr Cys Leu Ser Ser Leu Ala Ala Phe Ser Leu Ala Cys Gln
                245                 250                 255
Glu Arg Thr Thr Ala Phe Ser Ser Leu Val Leu Ser Ala Ile Ser Ser
            260                 265                 270
Arg Ala Ala Leu Lys Gln Ala Leu Ser Ala Ile Pro Gln Val Glu Phe
        275                 280                 285
Leu Leu Glu Asp Ser Ala Pro Arg Leu Pro Asn Val Ala Val Phe Ala
    290                 295                 300
Ile Pro Gly Ile Pro Ala Glu Ser Leu Gly Phe Phe Leu Ser Gln Lys
305                 310                 315                 320
Asn Ile Phe Val Gly Leu Gly Tyr Glu Arg Phe Gln Pro Leu Ser Gln
                325                 330                 335
Ile Leu Gln Ser Ser Gly Ile Ser Pro Phe Leu Cys His Ser Ala Leu
            340                 345                 350
His Val Ser Phe Thr Glu Arg Thr Pro Thr Thr His Phe Ser Ala Leu
        355                 360                 365
Ala Thr Ala Leu Gln Glu Gly Ile Ser His Leu Gln Pro Leu Val Thr
    370                 375                 380
Gln Ser Leu
385
<210>686
<211>234
<212>PRT
<213>Chlamydia trachomatis
<400>686
Thr Trp Arg Thr Leu Ser His Asp Gln Glu Asp Glu Glu Ile Gln Leu
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Val Ile Gly Lys Gln Gly His Leu Leu Met Gly Asn Thr Leu Leu Phe
             20                  25                  30
Tyr Trp Leu Val Asp Lys Thr Asn Gly Ile Ile Arg Glu Ala Lys Phe
         35                  40                  45
Gln Tyr Phe Gly His Pro Tyr Leu Leu Val Leu Ala Glu Ala Thr Cys
     50                  55                  60
Ser Leu Val Ile Gly Lys Thr Phe Ala Glu Ala Tyr Lys Ile Thr Ile
 65                  70                  75                  80
Asn Asp Leu Asp Gln Glu Val Arg Gly His Ala Asn Pro Ser Ile Phe
                85                  90                  95
Leu Glu Asp Leu Ser Pro Leu Tyr His Leu Val Ile Asp Ala Leu Asp
            100                 105                 110
Ile Ala Ile Glu Gln Cys Val Asp Ile Pro Val Asn Asp Ser Pro Phe
        115                 120                 125
Pro Phe Lys Asp Ala Leu Ser Gln Leu Ser Glu Gly Asn Pro Tyr Ser
    130                 135                 140
Thr Glu Glu Trp Gly Ala Leu Ser His Asp Glu Gln Leu Ser Ala Leu
145                 150                 155                 160
Asn Thr Met Met Lys Glu Lys Ile Ala Pro Leu Val Ala Val Asp Ser
                165                 170                 175
Gly Asp Val Arg Ile Val His Phe Glu Gly Leu Thr Val Thr Ile Ala
            180                 185                 190
Tyr Ser Gly Asn Cys Ser Ser Cys Leu Ser Ser Val Gly Ser Thr Leu
        195                 200                 205
Asn Ser Ile Gly Gln Leu Phe Arg Ala His Val Tyr Pro Leu Leu Glu
    210                 215                 220
Ile Lys Val Asp Glu Gln Ser Leu Leu Phe
225                 230
<210>687
<211>340
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<212>PRT
<213>Chlamydia trachomatis
<400>687

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Glu Leu Thr Ser Trp Arg Met Pro Val Leu Pro Arg Phe Leu Lys Asn
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Lys Ile Ala Ser Thr Lys Ser Leu Gly Tyr Leu Leu Ala Ala Ile Leu
            20                  25                  30
Ile Gly Phe Ile Met Leu Tyr Lys Pro Ser Ser Pro Gln Pro Thr Pro
        35                  40                  45
Thr Val Ala Ser Thr Glu Lys Lys Pro Ser His Trp Leu Lys Leu Ser
    50                  55                  60
His Leu Gly Asn Leu Gln Ser Ile Glu Ile Gln Ala Lys Lys Glu Gln
65                  70                  75                  80
Leu Glu Lys Asp Leu Thr Leu Phe Glu Pro Val Leu Gln Ala Thr Val
                85                  90                  95
Ala Leu Ser Gln Glu Glu Asp Ser Leu Ala Glu Ile Ser Val Ile Leu
            100                 105                 110
Ser Leu Pro Gln Ala Ser Thr Leu Ser Pro Ser Leu Val His Ser Ile
        115                 120                 125
Thr Asp Tyr Leu Thr Arg Ser Val Pro Gly Leu Thr Lys Glu His Ile
    130                 135                 140
Thr Leu Ser Asp Gln His Gly Asn Leu Tyr Ser Pro Leu Phe Glu Gln
145                 150                 155                 160
Ser Asn Thr Leu Leu Thr Thr Ser Leu Glu Arg Ser Leu Gln Thr Ile
                165                 170                 175
Leu Pro Gln Thr His Phe Ala Leu Asn Tyr Ile Pro Val Ala Asp Glu
            180                 185                 190
Gly His Leu Gln Leu Leu Val Asp Glu Asp Tyr Leu Asn Thr Leu Pro
        195                 200                 205
Lys Gly Ala Arg Val Lys Leu Leu Ser His Met Gln Glu Ile Leu Ser
    210                 215                 220
Ala Phe Ser Glu Met His Pro Ser Val Asp Ile Val Pro Phe Leu Lys
225                 230                 235                 240
Pro Val Ala His Lys Thr Ser Arg Leu Ser Ser Ile Val Leu Ser Ile
                245                 250                 255
Thr Ile Val Leu Leu Ser Leu Gly Ile Leu Gly Phe Ala Thr Phe Tyr
            260                 265                 270
Leu Ala Phe His Thr Tyr Asp His Val Ser Gln Gln Lys Glu Lys Ile
        275                 280                 285
Gln Ser Ile Asn Ile Pro Lys Leu Ile Glu Met Met Lys Arg Glu Ser
    290                 295                 300
Pro Glu Lys Val Ala Leu Ile Leu Ser Tyr Leu Asp Ser Ala Lys Ala
305                 310                 315                 320
Glu Glu Leu Leu Asn Lys Leu Pro Glu Glu Met Lys Ser Ala Val Leu
                325                 330                 335
Lys Leu Arg Thr
            340
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<210>688
<211>178
<212>PRT
<213>Chlamydia trachomatis
<400>688

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Glu His Lys His Leu Glu Asp Tyr Val Ala Ser Pro His Leu Arg Ser
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Leu Ala Cys Leu Asp Asn Ser Gln Leu Pro Ile Glu Thr Pro Leu Phe
            20                  25                  30
Glu Gln Lys Ala Leu Ser His Glu Leu Leu Ser Leu Ile Gln Val Phe
        35                  40                  45
Arg Lys Leu Ser Val His Leu Leu Ser Glu Ile Glu Lys Leu Ser Gln
    50                  55                  60
Lys Leu Lys Pro Glu Leu Leu Glu Leu Ala Val Leu Val Cys Glu Lys
```

```
 65                  70                  75                  80
Phe Leu Tyr Arg Lys Leu Ala Cys Thr Glu Glu Leu Ala Leu Leu Ile
                85                  90                  95
Ser Ala Ala Leu Gln His His Leu Ala Thr Tyr Ala Val Ser Pro Ile
            100                 105                 110
Lys Ile Gly Leu His Pro Glu Asp Leu Ser Asn Leu Ser Lys Trp Leu
        115                 120                 125
Ile Leu His Asp Val Pro Leu Leu Lys Asn Ile Glu Phe Ile Ala Asp
    130                 135                 140
Pro Leu Cys Lys Lys Ala Ser Tyr Lys Ile Glu Leu Pro Ser Gly Ile
145                 150                 155                 160
Leu Arg Gln Asp Ile Gly Glu Glu Leu Ser His Leu Leu Ser Val Leu
                165                 170                 175
Thr Pro
```

<210>689
<211>434
<212>PRT
<213>Chlamydia trachomatis
<400>689

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Met Thr His Leu Gln Glu Glu Thr Leu Leu Ile His Gln Trp Arg Pro
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Tyr Arg Glu Cys Gly Ile Leu Ser Arg Ile Ser Gly Ser Leu Leu Glu
            20                  25                  30
Ala Gln Gly Leu Ser Ala Cys Leu Gly Glu Leu Cys Gln Ile Ser Leu
        35                  40                  45
Ser Arg Ser Asp Pro Ile Leu Ala Glu Val Ile Gly Ile His Asn Arg
    50                  55                  60
Thr Thr Leu Leu Leu Ala Leu Thr Pro Ile Tyr Tyr Leu Ala Ile Gly
65                  70                  75                  80
Ala Glu Val Val Pro Leu Arg Arg Pro Ala Ser Leu Pro Leu Ser Asn
                85                  90                  95
His Leu Leu Gly Arg Val Leu Asp Gly Phe Gly Asn Pro Leu Asp Gly
            100                 105                 110
Gly Ser Gln Leu Pro Lys Thr Asn Leu Ser Pro Leu Phe Ser Ser Pro
        115                 120                 125
Ser Ser Pro Met Ser Arg Thr Pro Ile Gln Glu Val Phe Pro Thr Gly
    130                 135                 140
Ile Arg Ala Ile Asp Ala Leu Leu Thr Ile Gly Glu Gly Gln Arg Val
145                 150                 155                 160
Gly Ile Phe Ser Glu Pro Gly Gly Gly Lys Ser Ser Leu Leu Ser Thr
                165                 170                 175
Ile Ala Lys Gly Ser Gln Gln Thr Ile Asn Val Ile Ala Leu Ile Gly
            180                 185                 190
Glu Arg Gly Arg Glu Val Arg Asp Tyr Val Asn Gln His Lys Glu Gly
        195                 200                 205
Leu Ala Ala Gln Arg Thr Val Ile Ile Ala Ser Thr Ala Tyr Glu Thr
    210                 215                 220
Ala Ala Ser Lys Val Ile Ala Gly Arg Ala Ala Ile Thr Ile Ala Glu
225                 230                 235                 240
Tyr Phe Arg Asp Gln Gly Ala Arg Val Leu Phe Thr Met Asp Ser Leu
                245                 250                 255
Ser Arg Trp Ile Glu Ser Leu Gln Glu Val Ala Ile Ala Arg Gly Glu
            260                 265                 270
Thr Leu Ser Thr His His Tyr Ala Ala Ser Val Phe His His Val Ala
        275                 280                 285
Glu Phe Leu Glu Arg Ala Gly Asn Asn Asp Lys Gly Ser Ile Thr Ser
    290                 295                 300
Phe Tyr Ala Ile Leu His Tyr Ala Asn His Pro Asp Ile Phe Thr Asp
305                 310                 315                 320
Tyr Val Lys Ser Leu Leu Asp Gly His Phe Phe Leu Ser Pro Gln Glu
```

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                325                 330                 335
Lys Ser Phe Ser Ser Pro Pro Ile Asn Val Leu Thr Ser Leu Ser Arg
            340                 345                 350
Ser Ser Arg Gln Leu Ala Leu Pro His His Tyr Ala Ala Ala Gln Glu
        355                 360                 365
Leu Leu Ser Leu Leu Lys Ala Tyr His Glu Ala Ile Asp Ile Ile Gln
    370                 375                 380
Leu Gly Ala Tyr Val Ser Gly Gln Asp Ala His Leu Asp Arg Ala Ile
385                 390                 395                 400
Arg Leu Leu Pro Ser Val Lys Gln Phe Leu Ser Gln Pro Tyr Ser His
                405                 410                 415
Tyr Ser Ala Ile His Glu Thr Ile Glu Gln Leu Cys Gln Leu Leu Lys
            420                 425                 430
His Glu

<210>690
<211>119
<212>PRT
<213>Chlamydia trachomatis
<400>690
Phe Phe Phe Gly Leu Val Val Phe Val Cys Arg His Lys His Leu Ser
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Lys Thr Phe Ser Gly Pro Asp Ala Val Tyr Ile Glu Lys Phe Ala Leu
             20                  25                  30
Phe Val Asn Val Leu Asn Val Gly His Ile His Gly Tyr Met Thr Asp
         35                  40                  45
Ile Gly Ile Val Cys Ala Leu Leu Arg Lys Phe Ser Arg Cys Ala Pro
     50                  55                  60
Val Phe Val Val Ser Arg Cys Ser Ile Val Glu Ser Ala Phe Phe Thr
 65                  70                  75                  80
Val Ser Asn Arg Val Arg Phe Leu Lys Ser Ser Ile Val Ser Ser Leu
                 85                  90                  95
Asp Arg Ser Trp Ser Phe Leu Phe Met Phe Gln Gln Leu Ala Gln Leu
            100                 105                 110
Phe Asn Ser Phe Met Asn Ser
        115
<210>691
<211>455
<212>PRT
<213>Chlamydia trachomatis
<400>691
Met Thr Asp Ser Ser Tyr Val Asp Leu Ser Phe Leu Leu Asp Gln Leu
  1               5                  10                  15
Leu Pro Ile Gln Gln Glu His Leu Leu Glu Tyr Trp Pro Ser Leu Ser
             20                  25                  30
Pro Gln Gln Arg Leu Arg Leu Gly Thr Gln Ile Ala Gln Ile Asp Ile
         35                  40                  45
Pro Phe Phe Leu Arg Gln Gln Ala Leu Leu Gln Asn Pro Gln Ala Ser
     50                  55                  60
His Gln Glu Tyr Thr Pro Leu Ser Pro Val His Tyr Ala Gly Asp Asn
 65                  70                  75                  80
Pro Ala Tyr Ala Gln Leu Gly Phe Gln Leu Leu Gln Arg Gly Lys Val
                 85                  90                  95
Gly Cys Val Val Leu Ala Gly Gly Gln Gly Ser Arg Leu Lys Phe Asp
            100                 105                 110
Gly Pro Lys Gly Leu Tyr Pro Val Ser Ser Val Lys Lys Lys Pro Leu
        115                 120                 125
Tyr Gln Leu Val Ala Glu Lys Val Ala Ala Ala Ser Lys Trp Val Gly
    130                 135                 140
Arg Pro Leu Pro Leu Ala Ile Met Thr Ser Pro Leu Asn His Lys Gln
145                 150                 155                 160
```

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Thr Leu Ser Tyr Phe Ala Thr Asn Asp Tyr Phe Asn Leu Ser Pro Ser
                165                 170                 175
Gln Val Asp Phe Phe Cys Gln Pro Leu Trp Pro Leu Leu Ser Leu Ser
            180                 185                 190
Gly Asp Leu Phe Leu Glu Ser Glu Asp Arg Leu Ser Leu Gly Pro Thr
        195                 200                 205
Gly Asn Gly Cys Leu Ser Thr Leu Leu Gln Ser Ser Gly Ile Trp Asp
    210                 215                 220
Lys Trp His Gln Ala Gly Ile Glu Met Val Ser Val Ile Pro Ile Asp
225                 230                 235                 240
Asn Pro Leu Ala Leu Pro Phe Asp Arg Glu Leu Val Gly Phe His Ala
                245                 250                 255
Ala Glu His Asn Asp Val Thr Ile Lys Thr Thr Leu Arg Gln Ser Ala
            260                 265                 270
Gln Glu Asp Val Gly Val Leu Ile Glu Leu Ala Lys Gln Lys Ile Ala
        275                 280                 285
Val Val Glu Tyr Ser Thr Leu Thr Thr Lys Glu Arg Cys Ala Lys Thr
    290                 295                 300
Thr Glu Gly Asp Leu Thr Tyr Lys Leu Ala Asn Ile Gly Leu Tyr Cys
305                 310                 315                 320
Leu Ser Met Asp Phe Leu Ala Gln Thr Ala Tyr Gln Pro Leu Pro Leu
                325                 330                 335
Tyr Lys Ala Asn Lys His Ala Lys Gln Leu His Pro Ser Thr Thr Glu
            340                 345                 350
Lys Asn Ala Trp Lys Phe Glu Glu Phe Ile Phe Asp Leu Phe Gln Tyr
        355                 360                 365
Ser Glu His Ser Gln Ala Ile Val Tyr Pro Arg His Glu Cys Phe Ala
    370                 375                 380
Pro Leu Lys Asn Tyr Glu Gly Asn His Ser Pro Ala Thr Val Arg Glu
385                 390                 395                 400
Ala Met Arg Lys Arg Glu His Ala Leu Phe Thr Ala Val Thr Glu Arg
                405                 410                 415
Lys Leu Ser Pro Asn Thr Ile Phe Glu Leu Glu Ala Asp Phe Tyr Tyr
            420                 425                 430
Pro Ser Ser His Thr Ser Leu Glu Trp Glu Thr Lys Ile Phe Phe Gln
        435                 440                 445
Glu Thr Ile Ile Glu Ala Ser
    450                 455
<210>692
<211>336
<212>PRT
<213>Chlamydia trachomatis
<400>692
Gly Leu Met Lys Glu Thr Ile Ala Tyr Leu Gly Met Gly Met Trp Gly
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Phe Ser Leu Ala Asn Leu Leu Ala Asn Asn Gly His Arg Val Val Gly
             20                  25                  30
Trp Ala Arg Asn Pro Ala Leu Ile Glu Gln Leu Ser Val Gln Arg Arg
         35                  40                  45
His Pro Ala Ala Pro His Ile Ser Ile Pro Gln Asn Leu Ser Phe Thr
     50                  55                  60
Tyr His Met Glu Glu Ala Leu Asp Gly Ala Thr Met Ile Val Glu Gly
 65                  70                  75                  80
Val Thr Ser Ala Gly Met Arg Pro Val Leu Thr Gln Leu Lys Ala Leu
                 85                  90                  95
Thr Glu Leu Arg Val Pro Leu Val Ile Thr Ser Lys Gly Ile Glu Gln
            100                 105                 110
Asn Thr Gly Leu Leu Leu Ser Glu Ile Ala Leu Glu Ile Phe Gly Arg
        115                 120                 125
Pro Ala Ala Gln His Leu Gly Tyr Leu Ser Gly Pro Ser Ile Ala Ser
    130                 135                 140
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Glu Val Leu Arg Gly Cys Pro Cys Ser Val Val Ile Ser Ala Tyr Asn
145                 150                 155                 160
Pro Asp Thr Leu Lys Gln Ile His Arg Ala Phe Leu Thr Pro Thr Phe
                165                 170                 175
Arg Val Tyr Pro Asn Ser Asp Leu Lys Gly Val Ala Leu Gly Gly Ala
            180                 185                 190
Leu Lys Asn Val Ile Ala Ile Ala Cys Gly Ile Ser Asp Gly Phe Arg
        195                 200                 205
Phe Gly Asp Asn Ala Lys Ser Gly Leu Val Thr Arg Gly Leu His Glu
    210                 215                 220
Ile Arg Lys Phe Ala Thr Ile Met Gly Cys Arg Pro Asp Thr Leu Asn
225                 230                 235                 240
Gly Leu Ala Gly Leu Gly Asp Leu Cys Thr Thr Cys Phe Ser Ala Phe
                245                 250                 255
Ser Arg Asn Thr Leu Phe Gly Lys Leu Leu Ala Glu Gly Leu Thr Pro
            260                 265                 270
Glu Gln Ala Lys Thr Lys Ile Gly Met Val Val Glu Gly Val Tyr Thr
        275                 280                 285
Ala Leu Ser Ala His Gln Ile Ala Thr His His Arg Ile Asp Met Pro
    290                 295                 300
Ile Thr Thr Ser Val Tyr Arg Val Leu Tyr Glu Asn Leu Asp Ile Gln
305                 310                 315                 320
Glu Gly Ile Ala Gln Leu Leu Gln Arg Asp Thr Lys Glu Glu Tyr Leu
                325                 330                 335
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<210>693
<211>340
<212>PRT
<213>Chlamydia trachomatis
<400>693

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Met Ser Ser Lys Leu Val Asn Tyr Leu Arg Leu Thr Phe Leu Ser Phe
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Leu Gly Ile Ala Ser Thr Ser Leu Asp Ala Met Pro Ala Gly Asn Pro
             20                  25                  30
Ala Phe Pro Val Ile Pro Gly Ile Asn Ile Glu Gln Lys Asn Ala Cys
         35                  40                  45
Ser Phe Asp Leu Cys Asn Ser Tyr Asp Val Leu Ser Ala Leu Ser Gly
     50                  55                  60
Asn Leu Lys Leu Cys Phe Phe Gly Asp Tyr Ile Phe Ser Glu Glu Ala
 65                  70                  75                  80
Gln Val Lys Asp Val Pro Val Val Thr Ser Val Thr Thr Ala Gly Ile
                 85                  90                  95
Gly Pro Ser Pro Asn Ile Thr Ser Thr Thr Lys Thr Arg Asn Phe Asp
            100                 105                 110
Leu Val Asn Cys Asn Leu Asn Ala Asn Cys Val Ala Ala Ala Phe Ser
        115                 120                 125
Leu Pro Asp Arg Ser Leu Ser Ala Ile Pro Leu Phe Asp Val Ser Phe
    130                 135                 140
Glu Val Lys Val Gly Gly Leu Lys Gln Tyr Tyr Arg Leu Pro Met Asn
145                 150                 155                 160
Ala Tyr Arg Asp Phe Thr Ser Glu Pro Leu Asn Ser Glu Ser Glu Val
                165                 170                 175
Thr Asp Gly Met Ile Glu Val Gln Ser Asn Tyr Gly Phe Val Trp Asp
            180                 185                 190
Val Ser Leu Lys Lys Val Ile Trp Lys Asp Gly Val Ser Phe Val Gly
        195                 200                 205
Val Gly Ala Asp Tyr Arg His Ala Ser Cys Pro Ile Asp Tyr Ile Ile
    210                 215                 220
Ala Asn Ser Gln Ala Asn Pro Glu Val Phe Ile Ala Asp Ser Asp Gly
225                 230                 235                 240
Lys Leu Asn Phe Lys Glu Trp Ser Val Cys Val Gly Leu Thr Thr Tyr
                245                 250                 255
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Val Asn Asp Tyr Val Leu Pro Tyr Leu Ala Phe Ser Ile Gly Ser Val
            260                 265                 270
Ser Arg Gln Ala Pro Asp Asp Ser Phe Lys Lys Leu Glu Asp Arg Phe
        275                 280                 285
Thr Asn Leu Lys Phe Lys Val Arg Lys Ile Thr Ser Ser His Arg Gly
    290                 295                 300
Asn Ile Cys Ile Gly Ala Thr Asn Tyr Ile Ala Asp Asn Phe Phe Tyr
305                 310                 315                 320
Asn Val Glu Gly Arg Trp Gly Ser Gln Arg Ala Val Asn Val Ser Gly
                325                 330                 335
Gly Phe Gln Phe
            340
<210>694
<211>80
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<213>Chlamydia trachomatis
<400>694
Leu Asp Met Arg Gly Asn Leu Leu Leu Ile Ser Leu Glu Gly Glu Val
  1                 5                  10                  15
Lys Arg Arg Gly Phe Gly Gly Leu Glu Leu Glu Ser Ser Gly Asp Val
             20                  25                  30
His Ser Ala Leu Ala Ser Pro Ser Ser Phe Tyr Val Val Glu Glu Val
         35                  40                  45
Ile Gly Asp Ile Val Cys Arg Ser Asp Ala Asp Val Ser Thr Met Arg
     50                  55                  60
Ala Gly Asn Phe Thr Asn Phe Lys Phe Glu Val Ser Glu Ala Ile Phe
 65                  70                  75                  80
<210>695
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<212>PRT
<213>Chlamydia trachomatis
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Arg Ala Lys Thr Ile Met Arg Asn His Pro Ile Pro Glu Gly Gln Lys
  1                 5                  10                  15
Tyr Phe Val Pro Thr Ile Glu Thr Ala Ala Pro Arg Glu Arg Arg Val
             20                  25                  30
Ser Pro Ala Glu Val Ala Ala Asp Tyr Thr Gln Leu His Glu Ala Ala
         35                  40                  45
Thr Tyr Leu Gln Val Phe Gln Asp Leu Leu Asn Asp Ala His Gln Leu
     50                  55                  60
Gly Leu Asn Lys Glu Phe Val Glu Ser Leu Arg Gln Asp Phe Leu Lys
 65                  70                  75                  80
Thr Gly Ser Glu Met Ser Leu Met Gln Ala Leu Trp Thr Glu Glu Ser
                 85                  90                  95
Gln Arg Glu Ala Arg Lys Arg Glu Arg Lys Glu Leu Gln Gln Gln Leu
            100                 105                 110
Glu Ser Lys Val Leu Gly Pro Gln Ala Leu Thr Thr Ala Lys Glu Leu
        115                 120                 125
His Pro Val Asp Asp Ser Ile Val Asn Lys Met Pro Phe Gln Ser Ala
    130                 135                 140
Phe Ala Tyr Ile Leu Leu Asp Lys Tyr Ile Pro Ala Gln Glu Glu Ala
145                 150                 155                 160
Leu Tyr Ala Leu Ala Arg Glu Leu Asn Phe Ser Gly Tyr Ala Gln Thr
                165                 170                 175
Leu Phe Ser Pro Val Leu Glu Leu Val Lys Ser Phe Asn Asn Ala Pro
            180                 185                 190
Ile Val Tyr Asn Leu Gly Ser Tyr Ile Gly Gln Thr Ala Gly Thr Ala
        195                 200                 205
Asn Phe Lys Tyr Gly Tyr Gln Met Val Leu Asp Arg Tyr Glu Thr Glu
    210                 215                 220
Thr Gly Gln Leu Arg Lys Asp Ile Lys Asn Ala Glu Asn Ala Lys Gln
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225                 230                 235                 240
Gln Leu Ala Gln Ile Ile Lys Asn Val Glu Ala Asn Asn Ser Leu Thr
                245                 250                 255
Thr Glu His Lys Thr Gln Leu Lys Asp Met Ala Asn Gly Tyr Ile Gln
            260                 265                 270
Thr Leu Asp Val Cys Ile Ser Gln Met Gln Glu Leu Ser Thr Gly Leu
        275                 280                 285
Arg Gly Leu Ser Phe Ile Pro Gly Arg Asp Glu Tyr Asn Pro Ala Tyr
    290                 295                 300
Glu Ile Met Gly Ser Ser Phe Ser Val Val Thr Leu Gln Asn Leu Glu
305                 310                 315                 320
Gly Lys Val Val Asp Gly Glu Ile Asn Ile Ser Ser Gly Glu Thr Lys
                325                 330                 335
Gly Gly Leu Leu Asn Phe Phe Thr Tyr Phe Leu Ala Asp Val Gln Asn
            340                 345                 350
Phe Gly Asp Leu Ala Gln Thr Asn Gln Leu Met Leu Glu Leu Gln Met
        355                 360                 365
Arg Ala Met His Gln Gln Trp Ser Leu Val Thr Ala Ser Leu Lys Leu
    370                 375                 380
Leu His Asn Val Tyr Arg Thr Leu Ala Ser Ser
385                 390                 395
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Gly Thr Asp Phe Trp Arg Asn Met Pro Asp Glu Val Asp Glu Ala Phe
  1                 5                  10                  15
Thr Ala Lys Ile Gly Ser Lys Glu Phe Asp Thr Trp Ile Gln Gln Leu
             20                  25                  30
Thr Thr Phe Glu Ser Ala Val Ile Glu Gly Gly Arg Asn Gly Val Met
         35                  40                  45
Pro Gly Gly Glu Gln Gln Val Leu Gln Ser Leu Glu Ser Lys Gln Gln
     50                  55                  60
Asp Tyr Thr Ser Phe Asn Gln Asn Gln Gln Leu Ala Leu Gln Met Glu
 65                  70                  75                  80
Ser Ala Ala Ile Gln Gln Glu Trp Thr Met Val Ala Ala Ala Leu Ala
                 85                  90                  95
Leu Met Asn Gln Ile Phe Ala Lys Leu Ile Arg Arg Phe Lys
            100                 105                 110
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<212>PRT
<213>Chlamydia trachomatis
<400>697
Lys Ser Glu Val Glu Pro Ser Ser Leu Asn Tyr Phe Asn Ala Met Val
  1                 5                  10                  15
Glu Ala Lys Lys Thr Phe Val Glu Thr Ser Pro Ile Gln Met Val Tyr
             20                  25                  30
Ser Ser Leu Met Leu Asp Lys Tyr Leu Pro Asn Gln Gln Tyr Ile Leu
         35                  40                  45
Glu Thr Leu Gly Ser Gln Met Thr Phe Ser Asn Lys Ala Ala Arg Tyr
     50                  55                  60
Leu Asn Asp Ile Ile Ala His Ala Val Ser Phe Gln Thr Ala Asn Val
 65                  70                  75                  80
Tyr Tyr Ser Leu Gly Met Tyr Leu Arg Gln Met Asn Gln Gln Glu Phe
                 85                  90                  95
Pro Glu Val Ile Ser Arg Ala Asn Asp Thr Val Lys Lys Glu Ile Asp
            100                 105                 110
Arg Ser Arg Ala Asp Leu Phe His Cys Lys Lys Ala Ile Glu Lys Ile
        115                 120                 125
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09350-4-2-US = 09350-4-2-US

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Lys Glu Leu Val Thr Ser Ile Asn Ala Asp Thr Glu Leu Thr Ser Ser
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Gln Arg Ala Glu Leu Leu Glu Thr Leu Ala Ser Tyr Ala Phe Glu Phe
145                 150                 155                 160
Glu Asn Leu Tyr His Asn Leu Ser Asn Val Tyr Val Met Val Ser Lys
                165                 170                 175
Val Gln Ile Ser Gly Val Thr Cys Leu Met Lys Trp Met Arg Leu Leu
            180                 185                 190
Leu Leu Arg Leu Asp Arg Arg Asn Ser Ile Leu Gly Phe Ser Ser Leu
        195                 200                 205
Gln His Leu Lys Val Leu
    210
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<400>698
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Ala Thr Asn Leu Phe Asn Pro Thr Phe Phe Phe Asp Val Val Ser Leu
             20                  25                  30
Met Thr Ala Asp Pro Thr Lys Thr Met Ser Arg Gln Asp Tyr Asn Lys
         35                  40                  45
Val Ile Thr Ala Ser Glu Ser Ser Ile Gln Lys Ile Asn Gln Ala Ile
     50                  55                  60
Thr Ala Trp Glu Leu Ala Ile Ala Glu Cys Gly Thr Lys Lys Ala Lys
 65                  70                  75                  80
Ser Asn His Pro Val
                85
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Phe Phe Gln Gln Leu Asp Glu Lys Ser Lys Gly Leu Lys Arg Ala Leu
             20                  25                  30
Gly Leu Leu Glu Glu Val Asp Leu Glu Lys Phe Ile Pro Ser Leu Glu
         35                  40                  45
Lys Ser Pro Thr Pro Ile Thr Thr Gly Thr Thr Ser Lys Ile Ser Ala
     50                  55                  60
Asp Gly Ile Glu Ile Val Gly Glu Leu Ser Ser Glu Thr Ile Leu Ala
 65                  70                  75                  80
Asp Pro Asn Lys Ala Ala Ala Gln Val Phe Gly Glu Gly Leu Ala Asp
                85                  90                  95
Ser Phe Asp Asp Trp Leu Arg Leu Ser Glu Asn Gly Gly Ile Gln Asp
            100                 105                 110
Pro Thr Ala Ile Glu Glu Glu Ile Val Thr Lys Tyr Gln Thr Glu Leu
        115                 120                 125
Asn Thr Leu Arg Asn Lys Leu Lys Gln Gln Ser Leu Thr Asp Asp Glu
    130                 135                 140
Tyr Thr Lys Leu Tyr Ala Ile Pro Gln Asn Phe Val Lys Glu Ile Glu
145                 150                 155                 160
Ser Leu Lys Asn Glu Asn Asn Val Arg Leu Ile Pro Lys Ser Lys Val
                165                 170                 175
Thr Asn Phe Trp Gln Asn Ile Met Leu Thr Tyr Asn Ser Val Thr Ser
            180                 185                 190
Leu Ser Glu Pro Val Ala Asp Ala Met Asn Thr Thr Met Thr Glu Tyr
        195                 200                 205
Ser Leu Tyr Ile Glu Arg Ala Thr Glu Ala Ala Lys Leu Ile Arg Glu
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6,969,761 • 6,818,209

09/893,713 - 06/29/2001

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Ile Thr Asn Thr Ile Lys Asp Ile Phe Asn Pro Val Trp Asp Val Arg
225                 230                 235                 240
Glu Gln Thr Gly Ile Phe Arg Leu Lys Gly Ala Glu Tyr Asn Ala Leu
                245                 250                 255
Glu Gly Asn Met Ile Gln Ser Leu Leu Ser Phe Ala Gly Leu Phe Arg
            260                 265                 270
Gln Leu Met Ser Arg Thr Ala Thr Val Asp Glu Ile Gly Ala Leu Tyr
        275                 280                 285
Pro Lys Asn Asp Lys Asn Glu Asp Val Ile His Thr Ala Ile Asp Asp
    290                 295                 300
Tyr Val Asn Ser Leu Ala Asp Leu Lys Ala Asn Glu Gln Val Lys Leu
305                 310                 315                 320
Asn Gly Leu Leu Ser Leu Val Tyr Ala Tyr Tyr Ala Ser Thr Leu Gly
                325                 330                 335
Phe Ala Lys Lys Asp Val Phe Asn Asn Ala Gln Ala Ser Phe Thr Asp
            340                 345                 350
Tyr Thr Asn Phe Leu Asn Gln Glu Ile Gln Tyr Trp Arg Pro Arg Glu
        355                 360                 365
Thr Ser Ser Phe Asn Ile Ser Asn Gln Ala Leu Arg Thr Phe Lys Asn
    370                 375                 380
Lys Pro Ser Val Ile Ile Thr Ala Tyr Ile Phe Leu Ile Ile Lys Asp
385                 390                 395                 400
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<213>Chlamydia trachomatis
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Trp Ile Glu Glu Val Ile Ala Leu Val Ser Pro Asp Asp Val Arg Leu
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Cys Asp Gly Ser Glu Ala Glu Tyr Gln Gln Leu Cys Gln Gln Met Gln
        35                  40                  45
Asp Ala Gly Val Met Thr Pro Leu Asn Pro Glu Leu His Pro Asn Cys
    50                  55                  60
Phe Leu Val Arg Ser Ser Pro Ser Asp Val Ala Arg Ala Glu Gln Phe
65                  70                  75                  80
Thr Phe Ile Cys Thr Lys Thr Gln Glu Glu Ala Gly Pro Thr Asn Asn
                85                  90                  95
Trp Arg Asp Pro Gln Glu Met Arg Ala Glu Leu His Ala Leu Phe Arg
            100                 105                 110
Gly Cys Met Arg Gly Arg Thr Leu Tyr Ile Val Pro Phe Cys Met Gly
        115                 120                 125
Pro Leu Asn Ser Pro Phe Ser Leu Ile Gly Val Glu Ile Thr Asp Ser
    130                 135                 140
Pro Tyr Val Val Cys Ser Met Lys Ile Met Thr Arg Met Gly Ala Ser
145                 150                 155                 160
Val Leu Ala Met Leu Gly Ser Asn Gly Thr Phe Tyr Lys Cys Leu His
                165                 170                 175
Ser Val Gly Lys Pro Leu Ala Pro Gly Glu Lys Asp Val Ala Trp Pro
            180                 185                 190
Cys Asp Pro Glu His Met Arg Ile Val His Phe Gln Asp Asp Ser Ser
        195                 200                 205
Val Met Ser Phe Gly Ser Gly Tyr Gly Gly Asn Ala Leu Leu Gly Lys
    210                 215                 220
Lys Cys Xaa Thr Leu Arg Leu Ala Ser Tyr Leu Gly His Gln Gln Gly
225                 230                 235                 240
Trp Leu Ala Glu His Met Leu Ile Ile Gly Val Thr Asn Pro Glu Gly
                245                 250                 255
Arg Lys Lys Tyr Phe Ala Ala Ala Phe Pro Ser Ala Cys Gly Lys Thr
```

260 265 270
Asn Leu Ala Met Leu Met Pro Lys Leu Pro Gly Trp Lys Val Glu Cys
275 280 285
Ile Gly Asp Asp Ile Ala Trp Ile Arg Pro Gly Asn Asp Gly Arg Leu
290 295 300
Tyr Ala Val Asn Pro Glu Phe Gly Phe Phe Gly Val Ala Leu Gly Thr
305 310 315 320
Ser Glu Thr Thr Asn Pro His Ala Leu Ala Thr Cys His Ala Asp Ser
325 330 335
Leu Phe Thr Asn Val Ala Leu Thr Ala Asp Gly Asp Val Trp Trp Glu
340 345 350
Gly Lys Thr Thr Thr Pro Pro Gln Gly Met Ile Asp Trp Lys Gly Arg
355 360 365
Ala Trp Val Ser Gly Gly Glu Pro Ala Ala His Pro Asn Ala Arg Phe
370 375 380
Thr Ala Pro Leu Asp His Cys Pro Ser Leu Asp Pro Gln Trp Asn Asn
385 390 395 400
Pro Gln Gly Val Pro Leu Glu Ala Val Ile Phe Gly Gly Arg Arg Thr
405 410 415
Glu Thr Ile Pro Leu Val Tyr Glu Ala Leu Ser Trp Glu His Gly Val
420 425 430
Met Met Gly Ala Gly Met Ser Ser Thr Thr Thr Ala Ala Ile Val Gly
435 440 445
Glu Leu Gly Lys Leu Arg His Asp Pro Phe Ala Met Leu Pro Phe Cys
450 455 460
Gly Tyr Asn Met Ala Ala Tyr Phe Glu His Trp Leu Ser Phe Ala Thr
465 470 475 480
Lys Gly Leu Gln Leu Pro Arg Ile Phe Gly Val Asn Trp Phe Arg Lys
485 490 495
Asp Glu His Gly Gln Phe Ile Trp Pro Gly Phe Ser Glu Asn Leu Arg
500 505 510
Val Leu Glu Trp Ile Phe Arg Arg Thr Asp Gly Glu Asp Ala Ile Ala
515 520 525
His Arg Thr Pro Val Xaa Tyr Leu Pro Thr Ala Glu Gly Leu Asn Thr
530 535 540
Ser Gly Leu Asp Leu Ser Glu Asp Ala Leu Arg Ala Leu Leu Thr Val
545 550 555 560
Asp Ala Gln Gly Trp Lys Ala Glu Val Ser Asn Ile Arg Lys Tyr Cys
565 570 575
Ser Ile Phe Gly Ala Asp Met Pro Gln Arg Ile Leu Glu Glu Leu Ser
580 585 590
Arg Ile Glu Ser Glu Leu Lys
595
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1 5 10 15
Leu Tyr Asn Lys Ala Leu Gly Arg Phe Asp Arg Val Phe Asn Phe Phe
20 25 30
Ser Gly Asn Val Gly Ile Asp Leu Gly Thr Ala Asn Thr Leu Val Tyr
35 40 45
Val Arg Gly Arg Gly Ile Val Leu Ser Glu Pro Ser Val Val Ala Val
50 55 60
Asp Ala Gln Thr His Ala Val Leu Ala Val Gly His Lys Ala Lys Ala
65 70 75 80
Met Leu Gly Lys Thr Pro Arg Lys Ile Val Ala Val Arg Pro Met Lys
85 90 95
Asp Gly Val Ile Ala Asp Phe Glu Ile Ala Glu Gly Met Leu Lys Ala

SEQUENCE LISTING

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            100                 105                 110
Leu Ile Lys Arg Val Thr Pro Ala Arg Ser Met Phe Arg Pro Lys Ile
        115                 120                 125
Leu Ile Ala Val Pro Ser Gly Ile Thr Gly Val Glu Lys Arg Ala Val
    130                 135                 140
Glu Asp Ser Ala Leu His Ala Gly Ala Gln Glu Val Ile Leu Ile Glu
145                 150                 155                 160
Glu Pro Met Ala Ala Ala Ile Gly Val Asp Leu Pro Val His Glu Pro
                165                 170                 175
Ala Ala Ser Met Ile Ile Asp Ile Gly Gly Gly Thr Thr Glu Ile Ala
            180                 185                 190
Ile Ile Ser Leu Gly Gly Ile Val Glu Ser Arg Ser Leu Arg Ile Ala
        195                 200                 205
Gly Asp Glu Phe Asp Glu Cys Ile Ile Asn Tyr Met Arg Arg Thr Tyr
    210                 215                 220
Asn Leu Met Ile Gly Pro Arg Thr Ala Glu Glu Ile Lys Ile Thr Ile
225                 230                 235                 240
Gly Ser Ala Tyr Pro Leu Gly Asp Gln Glu Leu Glu Met Glu Val Arg
                245                 250                 255
Gly Arg Asp Gln Val Ala Gly Leu Pro Ile Thr Lys Arg Ile Asn Ser
            260                 265                 270
Val Glu Ile Arg Glu Cys Leu Ala Glu Pro Ile Gln Gln Ile Ile Glu
        275                 280                 285
Cys Val Arg Leu Thr Leu Glu Lys Cys Pro Pro Glu Leu Ser Ala Asp
    290                 295                 300
Leu Val Glu Arg Gly Met Val Leu Ala Gly Gly Gly Ala Leu Ile Lys
305                 310                 315                 320
Gly Leu Asp Lys Ala Leu Ser Lys Asn Thr Gly Leu Ser Val Ile Thr
                325                 330                 335
Ala Pro His Pro Leu Leu Ala Val Cys Leu Gly Thr Gly Lys Ala Leu
            340                 345                 350
Glu His Leu Asp Gln Leu Lys Lys Arg Lys Glu Ser Leu Val
        355                 360                 365
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Asn Val Phe Ser Thr Leu Pro Tyr Thr Glu Glu Leu Gln Gly Val Cys
        35                  40                  45
Asp Ile Ser Tyr Leu Asp Gly Glu Leu Glu Ala Arg Leu Phe Phe Leu
    50                  55                  60
Tyr Asp Gly Gln Lys Val Pro Ala Thr Ser Phe Ser Leu Gln Tyr Gln
65                  70                  75                  80
Glu Val Arg Thr Phe Val Arg Pro Asp Gly Ile Leu Ala Arg Asn Leu
                85                  90                  95
Val Glu Glu Arg Lys Ile Leu Glu Glu Val Phe Ser Gly Phe Val Tyr
            100                 105                 110
Asp Glu Arg Asp Gly Ala Phe His Val Lys Ser Glu Lys Lys Ile Val
        115                 120                 125
Glu Phe Met Thr Glu Thr Ile Pro Asn Asn Gln His Arg Ile Thr Phe
    130                 135                 140
Asn Cys Pro Glu Thr Leu Ser Asp Gln Phe Ile Tyr Asp Glu Thr Val
145                 150                 155                 160
Phe Asp Leu Ile Phe Arg Ala Gly Glu Asp Ile Asn Tyr Tyr Glu Ala
                165                 170                 175
Glu Leu Lys Val His Gly Leu Leu Lys Gly Ile Ser Leu Asp Leu Leu
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Substitute page

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                180                 185                 190
Trp Asp Cys Val Ser Ala Lys Lys Arg Phe Leu Glu Leu Pro Lys Lys
        195                 200                 205
Gly Gly Gln Leu Lys Lys Ala Arg Arg Gly Lys Ala Ser Ala Ser Lys
    210                 215                 220
Leu Pro Cys Ile Leu Val Leu Asp Leu Glu Lys Ile Ala Pro Val Ile
225                 230                 235                 240
Gln Ile Phe Asn Glu Ile Gly Phe Gln Val Leu Asp Asp Phe Val Asp
                245                 250                 255
Gln Cys Pro Leu Trp Ser Leu Ser Gly Ile Ser Pro Glu Ser Phe Lys
            260                 265                 270
Asp Leu Pro Val Asn Phe Ser Met Thr Glu Asp Leu Ala Glu Ile Gln
        275                 280                 285
Lys Gln Ile Arg Gly Glu Val Asp Phe Glu Phe Gln Glu Val Pro Ser
    290                 295                 300
Gln Ile Gln Ala Thr Leu Arg Gly Tyr Gln Lys Glu Gly Val His Trp
305                 310                 315                 320
Leu Glu Arg Leu Arg Lys Met His Leu Asn Gly Ile Leu Ala Asp Asp
                325                 330                 335
Met Gly Leu Gly Lys Thr Leu Gln Thr Ile Ile Ala Val Thr Gln Ser
            340                 345                 350
Arg Leu Glu Lys Gly Gly Gly Cys Ser Leu Ile Ile Cys Pro Thr Ser
        355                 360                 365
Leu Val Tyr Asn Trp Lys Glu Glu Phe Arg Lys Phe Asn Pro Glu Phe
    370                 375                 380
Lys Thr Leu Val Val Asp Gly Ile Pro Ser Gln Arg Arg Lys Gln Leu
385                 390                 395                 400
Ala Ser Leu Glu Glu Tyr Asp Val Ala Ile Thr Ser Tyr Asn Leu Leu
                405                 410                 415
Gln Lys Asp Ile Asp Ile Tyr Lys Asp Phe Leu Phe Asp Tyr Val Val
            420                 425                 430
Leu Asp Glu Ala His His Ile Lys Asn Arg Thr Thr Arg Asn Ala Lys
        435                 440                 445
Ser Val Lys Met Ile Arg Ala Cys His Arg Leu Ile Leu Thr Gly Thr
    450                 455                 460
Pro Ile Glu Asn Ser Leu Glu Glu Leu Trp Ser Leu Phe Asp Phe Leu
465                 470                 475                 480
Met Pro Gly Leu Leu Ser Ser Tyr Asp Arg Phe Val Gly Lys Tyr Ile
                485                 490                 495
Arg Ile Gly Asn Tyr Met Gly Asn Lys Ala Asp Asn Val Glu Ala Leu
            500                 505                 510
Arg Arg Lys Val Ala Pro Phe Ile Leu Arg Arg Met Lys Glu Asp Val
        515                 520                 525
Leu Glu Asp Leu Pro Pro Val Ser Glu Ile Leu Tyr His Cys His Leu
    530                 535                 540
Thr Glu Ser Gln Arg Glu Leu Tyr Gln Ser Tyr Ala Ala Ser Ala Arg
545                 550                 555                 560
Gln Glu Leu Ser Arg Leu Val Lys Gln Glu Gly Phe Glu Arg Ile His
                565                 570                 575
Ile His Val Leu Ala Thr Leu Thr Arg Leu Lys Gln Ile Cys Cys His
            580                 585                 590
Pro Ala Ile Phe Ala Lys Asp Thr Pro Glu Pro Gly Asp Ser Ala Lys
        595                 600                 605
Tyr Asp Met Leu Met Asp Leu Leu Ser Ser Leu Val Asp Ser Gly His
    610                 615                 620
Lys Thr Val Val Phe Ser Gln Tyr Thr Lys Met Leu Gly Ile Ile Arg
625                 630                 635                 640
Gln Asp Leu Glu Ala Lys Gly Ile Pro Phe Val Tyr Leu Asp Gly Ser
                645                 650                 655
Thr Lys Asn Arg Leu Glu Ile Val Gln Gln Phe Asn Glu Asp Pro Gly
            660                 665                 670
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Leu Leu Val Phe Leu Val Ser Leu Lys Ala Gly Gly Thr Gly Leu Asn
675 680 685
Leu Val Gly Ala Asp Thr Val Ile His Tyr Asp Met Trp Trp Asn Pro
690 695 700
Ala Val Glu Asn Gln Ala Thr Asp Arg Val His Arg Ile Gly Gln Ser
705 710 715 720
Arg Ser Val Ser Ser Tyr Lys Leu Val Thr Leu Asn Thr Ile Glu Glu
725 730 735
Lys Ile Leu Ser Leu Gln Asn Arg Lys Lys Gly Leu Val Lys Lys Val
740 745 750
Ile Asn Ser Asp Asp Glu Val Val Ser Lys Leu Thr Trp Glu Glu Val
755 760 765
Leu Glu Leu Leu Gln Ile
770

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20 25 30
Ala Asn Val Leu Ser Glu Asn Pro Phe Phe Leu Pro Leu Glu Tyr Ser
35 40 45
Glu Lys Asp Ser Ala Gly Leu Ala Val Leu Phe Val Pro Gln Lys Asn
50 55 60
Glu Gly Glu Val Phe Ser Pro Asn Gln Pro Ile Glu Phe Gln Leu Val
65 70 75 80
Leu Arg Leu Pro Gly Arg Ser Lys Pro Phe Tyr Ile Ser Asn Ile Lys
85 90 95
Thr Phe Leu Glu Gly Val Leu Tyr Gln Glu Pro Ile Val Phe Ser Gly
100 105 110
Arg Arg Phe Phe Phe Thr Leu Gln Ser Phe Ser Ala Ser Asp Arg Lys
115 120 125
Leu Ile Asp Leu Leu Ile Arg Tyr Ala Arg Tyr Ala Thr Gly Ser Ser
130 135 140
Glu Glu Lys Leu Leu Lys Ser Ala Phe Leu Thr Pro Ala Ser Leu Gly
145 150 155 160
Met Ile Leu Ser Lys Met Phe Glu His Gln Met Ala Glu Ser Gly Gly
165 170 175
Ser Gln Leu Gly Glu Arg Glu Cys Phe Gln Gly Ile Phe Cys Gly Asn
180 185 190
Leu Glu Glu Pro Leu Leu Trp Ser Val Ser Pro Ala Lys Met Lys Phe
195 200 205
His Leu Asp Tyr Phe Asp Thr Pro Tyr Lys Ala Leu Leu Met Lys Pro
210 215 220
Leu Ile Val Val Asp Glu Glu Glu Leu Gln Pro Glu Gln Ala Val Leu
225 230 235 240
Leu Glu Ser Asn Tyr Pro Gly Ile Ile His Lys Asn Val Tyr His His
245 250 255
Phe Leu Pro Gln Ile Lys Arg Ala His Leu Arg Thr Phe Ala Gly Leu
260 265 270
Arg Asp Ile Ala Ile Pro Glu Ala Leu Phe Gly Ser Phe Cys Glu Asn
275 280 285
Ala Leu Pro Val Phe Arg Asn Leu Leu Arg Asn Cys Pro Met Ser Arg
290 295 300
Leu
305

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Ser Ala Lys Ile Leu Ser Met Asn Gly Glu Thr Val Cys Ile Ser Ala
            20                  25                  30
Gln Ile Arg Gly Ser Tyr Asp Asn Val Tyr Glu Cys Glu Ile Glu Val
        35                  40                  45
Asp Arg Ala Glu Ser Asp Thr Val Asp Ser Asn Cys Asp Cys Ser Tyr
    50                  55                  60
Asn Tyr Asp Cys Gln His Val Val Ala Leu Leu Phe Tyr Leu Glu Gln
65                  70                  75                  80
Tyr Phe Asn Glu Met Val Val Thr Tyr Ser Lys Glu Ala Asp Leu Ser
                85                  90                  95
Ser Asn Glu Glu Val Ser Lys Glu Leu Gln Glu Thr Phe Val Val Ala
            100                 105                 110
Ala Ile Arg Glu Glu Glu Arg Arg Asp Arg Glu His Gln Lys Glu Ile
        115                 120                 125
Phe Gly Asn Thr Ile Met Leu Leu Met Phe
    130                 135
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            20                  25                  30
Val Thr Gln Lys Cys His Lys Glu Ala Leu Lys Thr Val Lys Lys Asn
        35                  40                  45
Val Val Leu Pro Gly Phe Arg Lys Gly Lys Ala Pro Asp Asn Ile Val
    50                  55                  60
Glu Ser Arg Tyr Ser Thr Gln Val Glu Gln Glu Leu Arg Arg Leu Phe
65                  70                  75                  80
Leu Arg Ala Ser Phe Glu Ala Leu Ser Gln Met Cys Asp Arg Lys Pro
                85                  90                  95
Leu Ser Pro Lys Ala Val Arg Ser Ser Ala Ile Asp Thr Cys Asn Pro
            100                 105                 110
Val Asn Gly Gly Ser Val Ser Phe Leu Tyr Glu Ala Phe Pro Val Ile
        115                 120                 125
Pro Ser Leu Pro Trp Glu Gln Leu Ser Leu Pro Asp Pro Glu Pro Val
    130                 135                 140
Lys Glu Ile Ser Glu Glu Asp Leu Glu Asn Gly Leu Lys Asn Val Ala
145                 150                 155                 160
Tyr Phe Phe Ala Thr Lys Thr Pro Val Thr Arg Pro Ser Gln Glu Gly
                165                 170                 175
Asp Phe Ile Ser Leu Ser Leu Tyr Val Ser Lys Arg Gly Asp Glu Asn
            180                 185                 190
Ser Thr Pro Val Ala Ile Phe Glu Asn Lys Tyr Phe Lys Ile Ser Glu
        195                 200                 205
Glu Asp Met Thr Asp Ser Phe Lys Ala Arg Phe Leu Asn Val Ser Thr
    210                 215                 220
Gly His Arg Val Glu Glu Glu Ile Gly Ser Glu Asp Ile Gln Ser Phe
225                 230                 235                 240
Leu Asn Gly Asp Leu Leu Thr Phe Thr Val Asn Ala Val Ile Glu Ile
                245                 250                 255
Ser Ser Pro Glu Met Asp Asp Glu Lys Ala Arg Glu Leu Gln Ala Glu
            260                 265                 270
Ser Leu Glu Asp Leu Lys Lys Lys Leu Arg Ile Gln Leu Glu Asn Gln
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        275                 280                 285
Ala Lys Glu Ala Gln His Gln Lys Arg Phe Ser Asp Ala Glu Asp Ala
    290                 295                 300
Leu Ala Gln Leu Ile Asp Phe Asp Leu Pro Glu Ser Leu Leu Arg Glu
305                 310                 315                 320
Arg Glu Glu Leu Leu Ser Arg Glu Lys Leu Leu Asn Ala Arg Leu Val
                325                 330                 335
Lys Tyr Cys Ser Asp Ser Glu Leu Glu Glu Gln Lys Gln Ala Leu Leu
            340                 345                 350
Glu Glu Ala Lys Ala Asp Ala Arg Lys Ala Val Lys Leu Leu Phe Leu
        355                 360                 365
Thr Gln Lys Val Phe Ser Glu Lys Gly Leu Ser Ile Ser Arg Glu Glu
    370                 375                 380
Leu Gln Tyr Met Met Asp Val Cys Ser Arg Glu Arg Phe Gly Gly Tyr
385                 390                 395                 400
Pro Pro Lys Asp Ile Ser Asn Glu Met Ile Gln Glu Leu Val Leu Val
                405                 410                 415
Ala Arg Asp Arg Leu Thr Tyr Arg Lys Ala Ile Glu Ala Ile Ser Ser
            420                 425                 430
Glu Lys Lys Asp Leu Glu Val Val Pro Ser
        435                 440
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Thr Gly Arg Gly Glu Arg Ala Met Asp Ile Tyr Ser Arg Leu Leu Lys
             20                  25                  30
Asp Arg Ile Val Met Ile Gly Gln Glu Ile Thr Glu Pro Leu Ala Asn
         35                  40                  45
Thr Val Ile Ala Gln Leu Leu Phe Leu Met Ser Glu Asp Pro Thr Lys
     50                  55                  60
Asp Ile Gln Ile Phe Ile Asn Ser Pro Gly Gly Tyr Ile Thr Ala Gly
 65                  70                  75                  80
Leu Ala Ile Tyr Asp Thr Ile Arg Phe Leu Gly Cys Asp Val Asn Thr
                 85                  90                  95
Tyr Cys Ile Gly Gln Ala Ala Ser Met Gly Ala Leu Leu Leu Ser Ala
            100                 105                 110
Gly Thr Lys Gly Lys Arg Tyr Ala Leu Pro His Ser Arg Met Met Ile
        115                 120                 125
His Gln Pro Ser Gly Gly Ile Ile Gly Thr Ser Ala Asp Ile Gln Leu
    130                 135                 140
Gln Ala Ala Glu Ile Leu Thr Leu Lys Lys His Leu Ser Asn Ile Leu
145                 150                 155                 160
Ala Glu Cys Thr Gly Gln Ser Val Glu Lys Ile Ile Glu Asp Ser Glu
                165                 170                 175
Arg Asp Phe Phe Met Gly Ala Glu Glu Ala Ile Ala Tyr Gly Leu Ile
            180                 185                 190
Asp Lys Val Ile Ser Ser Ala Lys Glu Thr Lys Asp Lys Ser Ile Ala
        195                 200                 205
Ser

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<213>Chlamydia trachomatis
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Gln Lys Lys Asn Leu Ala Val Cys Ser Phe Cys Gly Arg Ser Glu Lys
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                20                  25                  30
Cys Ile Lys Leu Cys Ser Gly Ile Leu Asp Lys Thr Pro Ala Pro Ala
            35                  40                  45
Thr Gln Glu Ile Ala Thr Ser Ser Thr Ser Ser Pro Thr Ser Leu Arg
        50                  55                  60
Val Leu Thr Pro Lys Glu Ile Lys Arg His Ile Asp Ser Tyr Val Ile
65                  70                  75                  80
Gly Gln Glu Arg Ala Lys Lys Thr Ile Ser Val Ala Val Tyr Asn His
                85                  90                  95
Tyr Lys Arg Ile Arg Ala Leu Met Gln Asp Lys Gln Val Ser Tyr Gly
            100                 105                 110
Lys Ser Asn Val Leu Leu Leu Gly Pro Thr Gly Xaa Gly Lys Thr Leu
        115                 120                 125
Ile Ala Lys Thr Leu Ala Lys Ile Leu Asp Val Pro Phe Thr Ile Ala
    130                 135                 140
Asp Ala Thr Thr Leu Thr Glu Ala Gly Tyr Val Gly Glu Asp Val Glu
145                 150                 155                 160
Asn Ile Val Leu Arg Leu Leu Gln Ala Ala Asp Tyr Asp Val Ala Arg
                165                 170                 175
Ala Glu Arg Gly Ile Ile Tyr Ile Asp Glu Ile Asp Lys Ile Gly Arg
            180                 185                 190
Thr Thr Ala Asn Val Ser Ile Thr Arg Asp Val Ser Gly Glu Gly Val
        195                 200                 205
Gln Gln Ala Leu Leu Lys Ile Ile Glu Gly Thr Val Ala Asn Ile Pro
    210                 215                 220
Pro Lys Gly Gly Arg Lys His Pro Asn Gln Glu Tyr Ile Arg Val Asn
225                 230                 235                 240
Thr Glu Asn Ile Leu Phe Ile Val Gly Gly Ala Phe Val Asn Leu Asp
                245                 250                 255
Lys Ile Ile Ala Lys Arg Leu Gly Arg Thr Thr Ile Gly Phe Ser Glu
            260                 265                 270
Glu Thr Asp Leu Ala Val Thr Asn Arg Asp His Leu Leu Ala Lys Val
        275                 280                 285
Glu Thr Glu Asp Leu Ile Thr Phe Gly Met Ile Pro Glu Phe Ile Gly
    290                 295                 300
Arg Phe Asn Cys Ile Val Asn Cys Glu Glu Leu Thr Leu Asp Glu Leu
305                 310                 315                 320
Val Glu Ile Leu Thr Glu Pro Ala Asn Ala Ile Xaa Lys Gln Tyr Arg
                325                 330                 335
Glu Leu Phe Glu Glu Glu Asn Val Lys Leu Ile Phe Glu Lys Glu Ala
            340                 345                 350
Leu Tyr Ala Ile Ala Gln Lys Ala Lys Gln Ala Lys Thr Gly Ala Arg
        355                 360                 365
Ala Leu Gly Met Ile Leu Glu Asn Leu Leu Arg Asp Leu Met Phe Glu
    370                 375                 380
Ile Pro Ser Asp Pro Thr Val Glu Ala Ile Arg Ile Glu Glu Asp Thr
385                 390                 395                 400
Ile Thr Gln Asn Lys Pro Pro Val Ile Ile Gln Lys Ser Pro Glu Ala
                405                 410                 415
Ile Ala
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<400>708

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Met Thr Gln Ser Thr Leu Glu Val Ala Lys Lys Ile Val Arg Lys Leu
  1               5                  10                  15
Arg Asn Ala Gly Tyr Gln Ala Tyr Phe Val Gly Gly Ser Val Arg Asp
             20                  25                  30
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Met Leu Leu Gly Arg Pro Ile Glu Glu Val Asp Ile Ala Thr Asn Ala
         35                  40                  45
Ser Pro Thr Ile Val Thr Thr Ile Phe Pro Asp Thr Leu Ser Ile Gly
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Ala Ala Phe Gly Ile Ile Ala Val Lys Glu Asn Gly Gln Leu Phe Glu
 65                  70                  75                  80
Val Ala Thr Phe Arg Ser Asp Glu Asp Tyr Glu Asp Gly Arg His Pro
                 85                  90                  95
Asn Arg Val Val Phe Ala Ser Met Lys Asp Asp Ala Ile Arg Arg Asp
            100                 105                 110
Phe Thr Ile Asn Gly Met Tyr Tyr Asp Pro Phe Leu Glu Lys Leu Phe
        115                 120                 125
Asp Leu Val Glu Gly Arg Ala Asp Leu Glu Arg Xaa Ile Ile Arg Ala
    130                 135                 140
Ile Gly Asn Pro Lys Gln Arg Phe Leu Glu Asp Lys Leu Arg Ile Leu
145                 150                 155                 160
Arg Ala Ile Arg Phe Ala Ala Thr Leu Gly Phe Ala Leu Asp Pro Gln
                165                 170                 175
Thr Glu Gln Ala Ile Ile Lys Glu Leu Pro Ser Leu Pro Asn Ser Val
            180                 185                 190
Ala Pro Glu Arg Ile Trp Gln Glu Leu Lys Lys Met Leu Arg Thr Ala
        195                 200                 205
Pro Tyr Glu Ser Leu Gln Leu Leu Thr Lys Leu Lys Val Leu Pro Ile
    210                 215                 220
Leu Phe Pro Glu Leu Lys Val Ser Ser Ser Gly Phe Leu Arg Ser Ala
225                 230                 235                 240
Ile Ala Phe Ala Gln Lys Ile His Asp Ser Gln Ile Pro Glu Ile Ala
                245                 250                 255
Leu Leu Leu Pro Leu Phe Arg Glu Val Asp Lys Glu Lys Ala Leu Glu
            260                 265                 270
Ala Phe Ser Arg Leu Arg Val Ser Asn Lys Glu Leu Lys Leu Leu Glu
        275                 280                 285
Asp Trp Tyr Ala Ala Leu Pro Gln Phe Leu Ser Lys Gln Asn Asp Lys
    290                 295                 300
Phe Phe Trp Ala His Phe Phe Ala Ser Glu Thr Ser Ser Leu Leu Leu
305                 310                 315                 320
Ser Leu Phe Leu Ser Met Gln Arg Ser Pro Asp Glu Gln Glu Leu Phe
                325                 330                 335
Ile Ala Arg Ile His Asp Leu Lys Thr Arg Leu Ala Ala Phe Ile Glu
            340                 345                 350
Arg Ile Gln Ser Gly Ala Pro Leu Val Ser Ala Gln Asp Leu Ile Ala
        355                 360                 365
Lys Gly Ile Thr Pro Gly Arg Leu Leu Gly Glu Leu Leu Arg Glu Ala
    370                 375                 380
Glu Ala Leu Ser Ile Glu His Glu Cys Ser Asp Lys Glu Lys Ile Leu
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Ser Leu Leu Lys Ser Lys Gly Phe Trp Lys
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Ser Gln Glu Gly Thr Thr Arg Asp Arg Leu Tyr Gly Glu Ile Arg Ala
         35                  40                  45
Trp Asp Ser Ile Ile His Val Ile Asp Thr Gly Gly Val Asp Gln Glu
     50                  55                  60
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Ser Thr Asp Arg Phe Gln Lys Gln Ile His Gln Gln Ala Leu Ala Ala
 65                  70                  75                  80
Ala Glu Glu Ala Ser Val Leu Leu Leu Val Val Asp Ile Arg Cys Gly
                85                  90                  95
Ile Thr Lys Gln Asp Glu Glu Leu Ala Lys Arg Leu Leu Pro Leu Lys
            100                 105                 110
Lys Pro Leu Ile Leu Val Met Asn Lys Ala Asp Ser Gln Gln Asp Leu
        115                 120                 125
Gln Arg Ile His Glu Phe Tyr Gly Leu Gly Ile Ser Asp Met Ile Ala
    130                 135                 140
Thr Ser Ala Ser His Asp Lys His Ile Asp Leu Leu Leu Glu Arg Ile
145                 150                 155                 160
Arg Gln Ile Ala Gln Ile Pro Val Pro Ser Val Glu Glu Gln Asp Val
                165                 170                 175
Val Gln Glu Asp Glu Leu Pro Ser Glu Glu Ala Ala Ile Ser Leu His
            180                 185                 190
Ala Phe Ala Asp Glu Thr Leu Phe Glu Asn Glu Ser Leu Ser Gln Glu
        195                 200                 205
Glu Ala Ser Phe Leu Glu Glu Leu Val Ala Gln Thr Ala Thr Pro Ala
    210                 215                 220
Pro Val Asp Arg Pro Leu Lys Val Ala Leu Ile Gly His Pro Asn Val
225                 230                 235                 240
Gly Lys Ser Ser Ile Ile Asn Ala Leu Leu Lys Glu Glu Arg Cys Ile
                245                 250                 255
Thr Asp Asn Ser Pro Gly Thr Thr Arg Asp Asn Ile Asp Val Ala Tyr
            260                 265                 270
Thr His Asn Asn Lys Glu Tyr Val Phe Ile Asp Thr Ala Gly Leu Arg
        275                 280                 285
Lys Thr Lys Ser Ile Lys Asn Ser Val Glu Trp Met Ser Ser Ser Arg
    290                 295                 300
Thr Glu Lys Ala Ile Ser Arg Thr Asp Ile Cys Leu Leu Val Ile Asp
305                 310                 315                 320
Ala Thr Gln Gln Leu Ser Tyr Gln Asp Lys Arg Ile Leu Ser Met Ile
                325                 330                 335
Ala Arg Tyr Lys Lys Pro His Val Ile Leu Val Asn Lys Trp Asp Leu
            340                 345                 350
Met Phe Gly Val Arg Met Glu His Tyr Val Gln Asp Leu Arg Lys Met
        355                 360                 365
Asp Pro Tyr Ile Gly Gln Ala His Ile Leu Cys Ile Ser Ala Lys Gln
    370                 375                 380
Arg Arg Asn Leu Leu Gln Ile Phe Ser Ala Ile Asp Asp Ile Tyr Thr
385                 390                 395                 400
Ile Ala Thr Thr Lys Leu Ser Thr Ser Leu Val Asn Lys Val Leu Ala
                405                 410                 415
Ser Ala Met Gln Arg His His Pro Gln Val Ile Asn Gly Lys Arg Leu
            420                 425                 430
Arg Ile Tyr Tyr Ala Ile His Lys Thr Thr Thr Pro Phe Thr Phe Leu
        435                 440                 445
Leu Phe Ile Asn Ser Asn Ser Leu Leu Thr Lys Pro Tyr Glu Leu Tyr
    450                 455                 460
Leu Lys Asn Thr Leu Lys Ala Ala Phe Asn Leu Tyr Arg Val Pro Phe
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Phe Leu Glu Ile Leu Ile Pro Met His Tyr Glu Pro Tyr Asp Glu Phe
                20                  25                  30
Glu Pro Asp Asn Glu Leu Asp His Leu Ile Cys Glu Ser Asp Lys Thr
            35                  40                  45
Lys Pro Leu Asp Ala Tyr His Asp Thr Gly Val Tyr Ile Glu Glu Asp
        50                  55                  60
Asp Arg Glu Asn Gly Asp Leu Leu Ile Val Leu Gly Lys Ser Ile Leu
65                  70                  75                  80
Asn Gly Ala Ile Arg Gln Phe Tyr Ile Ser Asp His Asn Tyr Ala Tyr
                85                  90                  95
Thr Arg Gly Tyr Tyr Gln Gly Cys Trp Glu Gly Trp Phe Asn Ile Pro
            100                 105                 110
Pro Lys Lys Ile Thr Thr Ala Glu Tyr Asp Cys Asp Gln Leu Leu Gln
        115                 120                 125
Pro Asp Leu Leu Leu Thr Thr Asn Val Glu Lys Leu Ile His Ala Pro
    130                 135                 140
Glu Asp Phe Pro Ala Gln Asn Ala Asn Leu Asp Asn Ile Ile Ile Cys
145                 150                 155                 160
Met Thr Ala Leu Asn Gly Glu His Arg Val Gln Phe Leu Ile Gly Asp
                165                 170                 175
Asn His Arg Ser Phe Trp Ile Arg His His Asp Gly Glu Ser Trp Ser
            180                 185                 190
Lys Trp Ser Thr Phe Ile
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            20                  25                  30
Ser Ala Ala Asn Ala Gln Gly Ile Cys Asn Asp Ile Leu Arg Ser Val
        35                  40                  45
Ile Ile Ser His Ile Asp Glu Glu Trp Lys Val His Leu Val Asp Met
    50                  55                  60
Asp Leu Leu Arg Ser Glu Val Gly Leu Arg Ser Val Gly Gln Lys Asp
65                  70                  75                  80
Pro Leu Ile Glu Phe Lys Asn Glu Ser Phe Leu Leu Phe Glu Gly Leu
                85                  90                  95
Ile Arg Asp Ile Arg Ile Ala Ile Val Lys His Leu Phe Ala Leu Glu
            100                 105                 110
Leu Ser Leu Thr Arg Ser Asp Arg Pro Asp Asn Ala Ile Pro Thr Val
        115                 120                 125
Ala Thr Ala Phe His Asn His Asp Asn Phe Arg Pro Met Glu Leu Thr
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Ile Val Gly Glu Glu Glu Glu Ser
145                 150
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            20                  25                  30
Tyr Thr Ile Arg Lys His Thr Leu Glu Tyr Asp Asp Val Met Asn Lys
        35                  40                  45
Gln Arg Gln Thr Ile Tyr Ala Phe Arg Asn Asp Val Leu His Ala Glu
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     50                  55                  60
Asp Leu Phe Val Val Ala Lys Glu Gln Ile Glu His Val Ala Leu Ala
 65                  70                  75                  80
Leu Ala Phe Leu Ile Leu Lys Asp Ala His Ala Asp His Cys Ser Leu
                85                  90                  95
Pro Lys Ile Glu Glu Trp Leu Ser Tyr Ser Phe Pro Val Lys Leu Asp
            100                 105                 110
Asp Gln Glu Ile Arg Arg Leu Gly Asp Val Asp Ala Val Gln Thr Thr
        115                 120                 125
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Val Val Tyr Gly Thr Ala Ser Gly Phe Gly Phe Asp Tyr Leu Arg Asp
            20                  25                  30
Asn Ser Ile Ala Thr Arg Lys Glu Glu Gln Val Gly Arg Gly Phe Tyr
        35                  40                  45
Phe Ala Ile Ile Asp Glu Ile Asp Ser Val Leu Ile Asp Glu Ala Arg
     50                  55                  60
Thr Pro Leu Ile Ile Ser Gly Pro Gly Glu Lys His Asn Pro Val Tyr
 65                  70                  75                  80
Phe Glu Leu Lys Asp Arg Val Ala Glu Leu Val Tyr Phe Gln Arg Glu
                85                  90                  95
Met Cys Asn His Ile Ala Ile Glu Ala Arg Lys Val Leu Asp Pro Phe
            100                 105                 110
Leu Gly Thr Asp Val Leu Pro Lys Asp Lys Lys Val Met Glu Ala Ile
        115                 120                 125
Ser Glu Ala Cys Arg Ala Leu Trp Leu Val Ser Lys Gly Met Pro Leu
    130                 135                 140
Asn Arg Val Leu Arg Arg Val Arg Glu His Pro Asp Leu Arg Ala Met
145                 150                 155                 160
Ile Asp Lys Trp Asp Val Phe Tyr His Ala Glu Gln Asn Lys Glu Glu
                165                 170                 175
Cys Leu Glu Lys Leu Ser Ser Leu Tyr Ile Val Val Asp Glu His Asn
            180                 185                 190
Asn Asp Phe Glu Leu Thr Asp Lys Gly Met Leu Gln Trp Ile Glu Lys
        195                 200                 205
Ile Gly Gly Ala Ala Glu Asp Phe Val Met Met Asp Met Gly His Glu
    210                 215                 220
Tyr Ala Leu Ile Glu Glu Asp Ala Thr Leu Ser Pro Ala Asp Lys Leu
225                 230                 235                 240
Asn Arg Lys Ile Ala Val Ser Glu Lys Asp Thr Gln Arg Lys Ala Arg
                245                 250                 255
Ala His Gly Leu Arg Gln Leu Leu Arg Ala His Leu Leu Met Glu Lys
            260                 265                 270
Asp Ile Asp Tyr Ile Val Arg Asp Asp Gln Ile Val Ile Ile Asp Glu
        275                 280                 285
His Thr Gly Arg Pro Gln Pro Gly Arg Arg Phe Ser Glu Gly Leu His
    290                 295                 300
Gln Ala Ile Glu Ala Lys Glu His Val Thr Ile Arg Lys Glu Ser Gln
305                 310                 315                 320
Thr Phe Ala Thr Val Thr Leu Gln Asn Phe Phe Arg Leu Tyr Glu Lys
                325                 330                 335
Leu Ala Gly Met Thr Gly Thr Ala Ile Thr Glu Ser Arg Glu Phe Lys
            340                 345                 350
Glu Ile Tyr Ser Leu Tyr Val Leu Gln Val Pro Thr Phe Lys Pro Cys
        355                 360                 365
Leu Arg Ile Asp His Asn Asp Ala Phe Tyr Met Thr Glu Arg Glu Lys
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370 375 380
Tyr Gln Ala Ile Val Ala Glu Ile Ile Ser Ala His Arg Ser Gly Lys
385 390 395 400
Pro Ile Leu Ile Gly Thr Glu Ser Val Glu Val Ser Glu Lys Leu Ser
405 410 415
Arg Ile Leu Arg Gln Asn Arg Ile Asn His Thr Val Leu Asn Ala Lys
420 425 430
Asn His Ala Gln Glu Ala Glu Ile Ile Ala Gly Ala Gly Lys Val Gly
435 440 445
Ala Val Thr Val Ala Thr Asn Met Ala Gly Arg Gly Thr Asp Ile Lys
450 455 460
Leu Asp Glu Glu Ala Val Ala Ala Gly Gly Leu Tyr Val Ile Gly Thr
465 470 475 480
Ser Arg His Gln Ser Arg Arg Ile Asp Arg Gln Leu Arg Gly Arg Cys
485 490 495
Ala Arg Leu Gly Asp Pro Gly Ala Ala Lys Phe Phe Leu Ser Phe Glu
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Arg His Phe Arg Ser Ser Arg Arg
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35 40 45
Lys Thr Leu Thr Ala Val Met Pro Leu Tyr Leu Asn Ala Leu Ser Gly
50 55 60
Lys Pro Val His Leu Val Thr Val Asn Asp Tyr Leu Ala Gln Arg Asp
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20 25 30
Lys Phe Ser Ser Leu Ser Asp Asp Glu Leu Arg Glu Lys Thr Pro Gln
35 40 45
Leu Lys Gln Arg Tyr Gln Asp Gly Glu Ser Leu Asp Lys Leu Leu Pro
50 55 60
Glu Ala Tyr Gly Val Val Lys Asn Val Cys Arg Arg Leu Ala Gly Thr
65 70 75 80
Pro Val Glu Val Ser Gly Tyr His Gln Gln Trp Asp Met Val Pro Tyr
85 90 95
Asp Val Gln Ile Leu Gly Xaa Ser Leu Cys Ile Lys Ala Leu Ser Pro
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Arg Cys Lys Pro Gly Lys Glu Arg His
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             20                  25                  30
Val Ala Trp Thr Leu Leu Ala Cys Leu Ala Met Ala Leu Val Phe Lys
         35                  40                  45
Ala Tyr Arg His Val Ile Ser Phe Arg Ser Tyr Val Asn Gln Val Met
     50                  55                  60
Arg Asp Val Arg Leu Ser Val Asp Leu Lys Glu Trp Ala Val Ala Glu
 65                  70                  75                  80
Met Arg Leu Ala Pro Ile Leu Lys Lys Arg Gln Tyr Arg Arg Lys Tyr
                 85                  90                  95
Leu Phe Glu Tyr Ile Arg Ile Leu Arg Glu Leu Glu Arg Phe Glu Glu
            100                 105                 110
Ala Glu Lys Leu Leu Gly Glu Ala Lys Lys Leu Lys Leu Ala Gly Ala
        115                 120                 125
His Phe Phe Leu Glu Val Ala His Lys Ala Phe Arg His Gly Ala Tyr
    130                 135                 140
Lys Glu Ala Ala His Ala Phe Ser Leu Leu Ser Ala Glu Leu Met Gly
145                 150                 155                 160
Glu Arg Glu Val Ala Arg Tyr Thr Ile Ser Leu Val Tyr Leu Gly Glu
                165                 170                 175
Val Asp Ala Ala Cys Arg Ile Ile Glu Pro Trp Ile Gly Pro Leu Ala
            180                 185                 190
His Gln Glu Val Phe Ile Ser Val Gly His Ile Tyr Phe Ala Thr Lys
        195                 200                 205
Arg Tyr Ala Asp Ala Ile Asp Phe Tyr Arg Arg Ala Arg Ser Leu Gly
    210                 215                 220
Ser Cys Pro Ile Asp Val Leu Tyr Asn Leu Ala His Ser Leu Arg Ile
225                 230                 235                 240
Cys Gly Gln Tyr Val Asp Ala Gly Met Leu Phe Arg Glu Leu Leu Gly
                245                 250                 255
Asp Pro Val Tyr Lys Asp Glu Ala Met Phe Asn Ile Gly Leu Cys Glu
            260                 265                 270
Gln Lys Leu Gly Asn Ser Lys Lys Ala Leu Leu Ile Tyr Gln Asn Ser
        275                 280                 285
Glu Leu Trp Val Arg Gly Asp Ala Leu Met Met Arg Tyr Ala Ala Leu
    290                 295                 300
Ala Ala Ala Asp Gln Gln Asp Tyr Gln Leu Ala Glu His Cys Trp Thr
305                 310                 315                 320
Leu Ala Phe Arg Cys Gln Ser Tyr Ala Asp Asp Trp Asn Cys Cys Val
                325                 330                 335
His Tyr Gly Leu Ala Leu Cys His Leu Lys Lys Tyr Ala Glu Ala Glu
            340                 345                 350
Lys Val Tyr Leu Arg Val Ile Gln Lys Thr Pro Asp Cys Leu Val Ala
        355                 360                 365
Cys Lys Ala Leu Ala Trp Leu Ala Gly Val Gly His Ala Thr Met Ile
    370                 375                 380
Ser Ala Arg Glu Gly Ile Ala Tyr Ala Lys Arg Ala Leu Gln Ile Lys
385                 390                 395                 400
Arg Ser Pro Glu Val Leu Glu Leu Leu Ser Ala Cys Glu Ala Arg Glu
                405                 410                 415
Gly Asn Phe Asp Val Ala Tyr Asp Ile Gln Ala Ile Leu Ala Glu Arg
            420                 425                 430
Asp Thr Thr Ala Lys Glu Arg Glu Arg Arg Ser Gln Ile Leu Lys Asn
        435                 440                 445
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20 25 30
Thr Arg Ile Gly Arg Ala Leu Tyr Ser Val Leu Cys Lys Asn Ser Leu
35 40 45
Phe Ser Arg Ile Val Gly Trp Cys Gln Arg Leu Arg Val Thr Arg Tyr
50 55 60
Phe Ile Lys Pro Phe Val Thr Lys Tyr Arg Ile Cys Ile Glu Glu Ser
65 70 75 80
Ala Ser Pro Leu His Asp Tyr Ala Ser Phe Asn Asp Phe Phe Val Arg
85 90 95
Lys Leu Lys Pro Asp Ala Arg Pro Ile Cys Gln Gly Glu Asp Ile Cys
100 105 110
Val Thr Pro Ala Asp Gly Ala Tyr Leu Val Phe Pro Ser Met Ala Asp
115 120 125
Leu Ser Leu Phe Thr Ile Lys Asn Lys Pro Phe Ser Leu Glu Ser Phe
130 135 140
Leu Gly Asp Pro Gln Leu Ala His Gln Tyr Ala Gln Gly Ser Met Ala
145 150 155 160
Ile Ala Arg Leu Ala Pro Phe Asp Tyr His Arg Phe His Phe Pro Ile
165 170 175
Ala Gly Ile Ala Glu Ala Pro Arg Arg Ile Asn Gly His Leu Phe Ser
180 185 190
Ile His Pro Leu Met Leu Lys Arg Asn Phe Glu Val Phe Thr Glu Asn
195 200 205
Lys Arg Glu Ile Thr Ile Ile Thr Ser Lys Glu Phe Gly Glu Val Ala
210 215 220
Tyr Val Glu Val Gly Ala Leu Asn Val Gly Ser Ile His Gln Thr Phe
225 230 235 240
Ser Pro Gly Ser Tyr Val Lys Lys Gly Ala Glu Lys Gly Phe Phe Ala
245 250 255
Phe Gly Gly Ser Thr Val Val Leu Leu Phe Gln Pro Gln Arg Ile Ile
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Cys Arg Met Gly Gln Ser Leu Gly Lys Arg Phe Ser Ser
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20 25 30
Ser Asp Arg Ile Phe Ser Gly Asn Ile Ala Gly Tyr Ala Ser His Thr
35 40 45
Ala His Leu Gly Thr Val Ser His Asn Ala Val Cys Ile Asp Gln Ala
50 55 60
Leu Val Leu Val Met Arg Ala Pro Arg Ser Phe Thr Gly Glu Asp Ile

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Asn Ala Leu Leu Ala Glu Gly Ala Arg Ala Ala Leu Pro Gly Glu Phe
            100                 105                 110
Ser Gln Arg Ala Phe Leu Asn Gly Lys Ile Asp Leu Ile Gln Ala Glu
        115                 120                 125
Ala Ile Gln Gln Leu Ile Ala Ala Asp Asn Ile Asp Ala Phe Arg Ile
    130                 135                 140
Ala Gln Asn Gln Phe Gln Gly His Thr Ser Gln Ala Ile Ser Ser Ile
145                 150                 155                 160
Ser Ser Leu Ile Ile Glu Ala Leu Ala Tyr Ile Glu Val Leu Ala Asp
                165                 170                 175
Phe Pro Glu Glu Asp Ile Glu Thr Glu Asp Ser Leu Pro Lys His Arg
            180                 185                 190
Ile Met Glu Ala Leu Ser Ile Thr Asp Glu Leu Leu Ser Ser Phe Asp
        195                 200                 205
Glu Gly Gln Arg Leu Ala Gln Gly Thr Ser Ile Val Leu Ala Gly Leu
    210                 215                 220
Pro Asn Ala Gly Lys Ser Ser Ile Leu Asn Ala Leu Thr Gln Lys Asn
225                 230                 235                 240
Arg Ala Ile Val Thr Asp Ile Pro Gly Thr Thr Arg Asp Ile Leu Glu
                245                 250                 255
Glu Asn Trp Val Leu Gln Gly Lys Asn Leu Arg Leu Ile Asp Ser Ala
            260                 265                 270
Gly Leu Arg Glu Thr Glu Asn Leu Val Glu Lys Glu Gly Ile Ala Arg
        275                 280                 285
Ala Arg Glu Ala Met Ser Gln Ala Glu Gly Ile Leu Trp Val Val Asp
    290                 295                 300
Ala Ser Gln Pro Leu Pro Glu Phe Pro Thr Ile Leu Tyr Gln Lys Pro
305                 310                 315                 320
Thr Ile Leu Leu Trp Asn Lys Cys Asp Ile Val Ser Pro Pro Gln Ile
                325                 330                 335
Glu Val Pro Phe Gln Gln Ile Ser Val Ser Ala Lys Thr Gly Glu Gly
            340                 345                 350
Leu Leu Glu Leu Lys Gln Ala Leu Gln Lys Trp Leu Asn Thr Thr Gln
        355                 360                 365
Leu Gly Lys Ser Ser Lys Ile Phe Leu Val Ser Ala Arg His His Ser
    370                 375                 380
Leu Leu His Ser Val Tyr Thr Cys Leu Thr Ala Ala Leu Asn Gly Phe
385                 390                 395                 400
Thr Glu His Leu Pro Asn Glu Cys Ile Ala Leu Asp Leu Arg Gln Ala
                405                 410                 415
Leu His Ser Ile Gly Asn Leu Ser Gly Ser Glu Val Thr Glu Asn Val
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Leu Gly Glu Ile Phe Ser Lys Phe Cys Ile Gly Lys
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             20                  25                  30
Trp Gln Thr Pro Phe Gln Leu Leu Ile Ala Ile Leu Leu Ser Gly Asn
         35                  40                  45
Ser Thr Asp Lys Ala Val Asn Ser Val Thr Pro Ser Leu Phe Ala Lys
     50                  55                  60
Ala Pro Asp Ala Gln Ser Met Ser Met Leu Ala Pro Ser Glu Ile Tyr
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 65                  70                  75                  80
Ser Leu Ile Ala Pro Cys Gly Leu Gly Glu Arg Lys Ala Ala Tyr Ile
                85                  90                  95
His Ala Leu Ser His Ile Leu Val Asp Arg Tyr His Gln Glu Thr Pro
            100                 105                 110
His Thr Leu Pro Glu Leu Thr Ala Leu Pro Gly Val Gly Arg Lys Thr
        115                 120                 125
Ala Ser Val Phe Leu Ser Ile Tyr Tyr Gly Glu Asn Thr Phe Pro Val
    130                 135                 140
Asp Thr His Ile Leu Arg Leu Ala His Arg Trp Gln Leu Ser Asn Glu
145                 150                 155                 160
Thr Glu Ser Phe Ser Cys Arg Lys Arg Phe Ser Thr Val Ile Trp Thr
                165                 170                 175
Lys Ala Leu Ser Glu Ile Ala Phe Thr Thr His Leu Leu Cys Lys Ser
            180                 185                 190
Val Leu Ser Ser Ala Pro Pro Gln His Arg Cys Val Ser Tyr Leu Leu
        195                 200                 205
Phe Leu Thr Asp Arg Leu Thr Ser Phe Leu Thr Glu Ser Ser Ile Ser
    210                 215                 220
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             20                  25                  30
Trp Asp Asp Phe Thr His Asp Val Gln Thr Gln Lys Ser Gly Arg Glu
         35                  40                  45
Thr Asp Met Pro Asp Ser Leu Arg Gly Arg Val Glu Glu Asp Ala Ala
     50                  55                  60
Ser Gln Met Ile Val Glu Val Leu Leu Ala Phe Leu Asp Asn Gln Asp
 65                  70                  75                  80
Met Tyr Leu Ser Val Ser Phe Glu Ile Leu Arg Asn Phe Leu Glu Glu
                85                  90                  95
Lys Val Leu Ser Lys Arg Ser Leu Ser Pro Arg Ser His Glu Ala Ile
            100                 105                 110
Lys Lys Ile Lys Asp Leu Tyr Leu Val Ser Pro Glu Asp Phe Gln Thr
        115                 120                 125
Phe Ile Gly Gly Val Ile Thr Glu Ser Leu Phe Gln Glu Glu Asp Gln
    130                 135                 140
Leu Val Val Gly Cys Met Ile Phe Ser Gln Glu Gly Arg Glu Leu Phe
145                 150                 155                 160
Asp Ser Trp Lys Gly Ile Ser Gln Thr Tyr Pro His Asp Met Leu Tyr
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Thr Gln Ala Phe Leu Ala Glu Val Val Leu His Val Val Asn Thr Thr
            180                 185                 190
Phe Ile

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             20                  25                  30
Glu Leu Val Ile Arg Asp Ala Ser Cys Lys Leu Val Tyr Asn Arg Arg
         35                  40                  45
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Leu His Met Leu Glu Ala Ile Pro Leu Asp Gln Lys Leu Ser Thr Asp
50 55 60
Gln Glu Gly Glu Ser Ser Ile Leu Arg Glu Val Ile Ser Glu Leu Leu
65 70 75 80
Ala His Ser Gly Glu Ser Tyr Ala Ile Ser Ala Gln Leu Leu Ala Val
85 90 95
Ile Asp Ile Tyr Leu Lys Gln Glu Gln Pro Ser Asn Ser Trp Phe Ala
100 105 110
Arg Ile Phe Arg Lys Arg Glu Arg Ala Arg Lys Arg Gln Thr Ile Asn
115 120 125
Lys Leu Leu Leu Leu Lys Ser Ile Leu Phe Phe Glu Arg Gln Arg Pro
130 135 140
Val Lys Lys Val Glu Ser Val Ala Asp Ser Ile Leu Gln Arg Ser Lys
145 150 155 160
Gly Lys Phe Phe Val Leu Gly Arg Phe Tyr Thr
165 170

<210>722
<211>253
<212>PRT
<213>Chlamydia trachomatis
<400>722
Ala Ser Ile Trp Lys Arg Arg Val Ala Arg Arg Asn Glu Asn Tyr Asp
1 5 10 15
Val Lys Lys Ala Glu Glu Gln Gln Gly Ile Val Gln Tyr Leu Gln Asp
20 25 30
Ser Lys Met Pro Ala Leu Thr Arg Ala Tyr Arg His Leu Arg Ala Phe
35 40 45
Asn Ser Ala Cys Leu Arg Thr Ile Arg Glu Phe Phe Ala Thr Ile Phe
50 55 60
Arg Ala Leu Arg Asp Ala Tyr Tyr Arg His Cys Thr Arg Ser Gly Ile
65 70 75 80
Asn Phe Cys Gly Ala Asp Lys Asp Ser Leu Glu Val Leu Val Ala Val
85 90 95
Gly Leu Leu Leu Arg Met Ala Thr Leu Arg Ser Phe Glu His Val Gly
100 105 110
Gly Asn Tyr Glu Asp Arg Leu Val Asn Asn Asp Ala Pro Val Thr Gly
115 120 125
Ala Gly Arg Thr Leu Val Tyr Asp Ala Val Asp Asp Ile Glu Ser Ile
130 135 140
Leu Asn Thr Arg Thr Asn Trp Pro Gln His Val Met Ile Gly Phe Ser
145 150 155 160
Arg Gly Leu Val Gln Leu Cys Ala Thr Pro Tyr Asn Ala Thr Ser Gln
165 170 175
Glu Cys Phe Lys Ser Ile Val Arg Leu Glu Lys Glu Asp Pro Ser Ser
180 185 190
Asp Tyr Ser Gln Ala Leu Leu Leu Ala Gly Ile Ile Asp Arg Leu Ala
195 200 205
Glu Lys Ala Pro Met Ala Ala Lys Tyr Val Leu Asp Ala Leu Arg Val
210 215 220
Arg Thr Ser Glu Leu Ile Gly Glu Leu Ile Ile Leu Asp Leu Leu Pro
225 230 235 240
Pro Val Trp Lys Val Gly Arg Gly Xaa Tyr Ser Leu Leu
245 250

<210>723
<211>99
<212>PRT
<213>Chlamydia trachomatis
<400>723
Ala Leu Tyr Gly Gly Asn Ser Gly Pro Glu Gly Phe Ser Ser Ala Ser
1 5 10 15
Arg Gly Asp Glu Ile Asp Asp Val Pro Asp Ser Glu Glu Gly Glu Leu

```
                20                  25                  30
Glu Glu Arg Val Ser Asp His Ala Glu Ser Ile Ile Thr Glu Ser Ser
            35                  40                  45
Glu Thr Leu Phe Arg Thr Thr Ser Ser Ser Gly Val Ser Glu Asp Leu
        50                  55                  60
Gln Gln His Val Ser Leu Glu Glu Ser Pro Arg Gln Arg Gly Phe Leu
65                  70                  75                  80
Gly Arg Ile Arg Asp Ala Val Xaa Phe Tyr Leu Glu Ala Ser Cys Cys
                85                  90                  95
Thr Lys Glu
```

<210>724
<211>339
<212>PRT
<213>Chlamydia trachomatis
<400>724

```
Asn Leu Ile Lys Ile Val Gly Ile Lys Ser Tyr Cys Phe Gly Gly Gly
  1                 5                  10                  15
Phe Met Ser Ile Arg Pro Thr Asn Gly Ser Gly Asn Gly Tyr Pro Ser
            20                  25                  30
Ile Asn Pro Ser Asn Asp Asn Gln Asp Gly Leu Val Gln Ser Thr Ser
        35                  40                  45
Gly Pro Asn Tyr Gly Gly His Thr Val Ser Ser Arg Gly Gly Phe Gln
    50                  55                  60
Gly Ile Cys Val Arg Ile Ala Asp Leu Phe Arg Asn Cys Phe Ser Arg
65                  70                  75                  80
Asn Arg Gly Thr Thr Thr Pro Ser Arg Pro Val Ile Thr Gln Ala Asp
                85                  90                  95
Ile Tyr His Pro Thr Ile Phe Gly Gln Gly Ala Gln Pro Ile Val Ser
            100                 105                 110
Thr Gly Asp Lys Lys Leu Asp Ser Ala Ile Ile Gln Ala Asp Leu Arg
        115                 120                 125
Ala Gln Asn Lys Gln Thr Leu Ala Thr His Ile Gln Ser Lys Leu Gly
    130                 135                 140
Ser Met Glu Gly Gln Ser Pro Gln Asp Tyr Lys Ala Gly Ala Tyr Ser
145                 150                 155                 160
Ala Leu Arg Leu Met Leu Phe Thr Pro Gly Glu Thr Thr Val Ser Ser
                165                 170                 175
Glu Arg Glu Arg Gln Ala Cys Val Thr Gly Arg Asp Leu Trp Glu Gln
            180                 185                 190
Ala Ala Gly Asp Leu Ala Thr Asn Gly Asn Thr Asp Gly Leu Met Leu
        195                 200                 205
Met Ala Asn Leu Ser Val Gly Gly Lys His Val Pro Ala Gly His Leu
    210                 215                 220
Arg Glu Tyr Met Asn Thr Val Lys Gly Thr Phe Thr Asp Glu Asn Glu
225                 230                 235                 240
Ala Thr Asp Pro Thr Val Asp Ala Ile Leu Asp Leu Ala Ala Lys Ile
                245                 250                 255
Asp Ala Thr Glu Phe Ser Ser Pro Gly Ser Gly Pro Val Ile Leu Asn
            260                 265                 270
Tyr Ile Gly Asn Cys Gly Gln Val Val Leu Glu Asn Glu Lys Met Asn
        275                 280                 285
Gln Leu Val Leu Glu Asp Gln Asn Gly Gln Asp Pro Gln Arg Val Gln
    290                 295                 300
Asp Asn Ser Lys Glu Leu Gln Lys Leu Leu Glu Asn Ala Arg Lys Thr
305                 310                 315                 320
Asp Pro Glu Leu Tyr Phe Gln Thr Leu Thr Val Ile Thr Ser Ser Val
                325                 330                 335
Phe Leu Asp
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<210>725

<211>403
<212>PRT
<213>Chlamydia trachomatis
<400>725

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Met Asp Lys Leu Ser Ile Arg Asp Leu Ser Leu Glu Gly Lys Lys Val
  1               5                  10                  15
Leu Val Arg Val Asp Phe Asn Val Pro Ile Lys Asp Gly Lys Ile Leu
            20                  25                  30
Asp Asp Val Arg Ile Arg Ser Ala Met Pro Thr Ile His Tyr Leu Leu
        35                  40                  45
Lys Gln Asp Ala Ala Val Ile Leu Val Ser His Leu Gly Leu Pro Lys
    50                  55                  60
Gly Gly Val Phe Glu Glu Ala Tyr Ser Leu Ala Pro Ile Val Pro Val
65                  70                  75                  80
Leu Glu Gly Tyr Leu Gly His His Val Pro Leu Ser Pro Asp Cys Ile
                85                  90                  95
Gly Glu Val Ala Arg Gln Ala Val Ala Gln Leu Ser Pro Gly Arg Val
            100                 105                 110
Leu Leu Leu Glu Asn Val Arg Phe His Lys Gly Glu Glu His Pro Asp
        115                 120                 125
Glu Asp Pro Ser Phe Ala Ile Glu Leu Ala Ala Tyr Ala Asp Phe Tyr
    130                 135                 140
Val Asn Asp Ala Phe Gly Thr Ser His Arg Lys His Ala Ser Val Tyr
145                 150                 155                 160
Arg Val Pro Gln Leu Phe Pro Asp Arg Ala Ala Ala Gly Phe Leu Met
                165                 170                 175
Glu Lys Glu Leu Glu Phe Leu Gly Gln His Leu Leu Val Glu Pro Lys
            180                 185                 190
Arg Pro Phe Thr Ala Ile Leu Gly Gly Ala Lys Met Ser Ser Lys Ile
        195                 200                 205
Gly Val Ile Glu Ala Leu Leu Ser Cys Val Asp His Leu Val Leu Ala
    210                 215                 220
Gly Gly Met Gly Tyr Thr Phe Leu Arg Ala Met Asn Arg Gln Val Gly
225                 230                 235                 240
Asn Ser Leu Val Glu Glu Ser Gly Ile Pro Leu Ala Lys Lys Val Leu
                245                 250                 255
Glu Lys Ala Gln Ala Leu Gly Val Lys Ile His Leu Pro Val Asp Ala
            260                 265                 270
Lys Val Ala Lys Gln Cys Asp Ser Gly Glu Asp Trp Arg Glu Leu Ser
        275                 280                 285
Ile Gln Glu Gly Ile Pro Glu Gly Leu Ala Gly Phe Asp Ile Gly Ala
    290                 295                 300
Gln Thr Ile Glu Leu Phe Ser Lys Val Ile Gln Glu Ser Ala Thr Ile
305                 310                 315                 320
Phe Trp Asn Gly Pro Val Gly Val Tyr Glu Val Pro Pro Phe Asp Gln
                325                 330                 335
Gly Ser Lys Ala Ile Ala Gln Cys Leu Ala Ser His Ser Ser Ala Val
            340                 345                 350
Thr Val Val Gly Gly Gly Asp Ala Ala Ala Val Val Ala Leu Ala Gly
        355                 360                 365
Cys Thr Ser Gln Ile Ser His Val Ser Thr Gly Gly Gly Ala Ser Leu
    370                 375                 380
Glu Phe Leu Glu Lys Gly Ser Leu Pro Gly Thr Glu Ile Leu Ser Pro
385                 390                 395                 400
Ala Gln Ser
```

<210>726
<211>121
<212>PRT
<213>Chlamydia trachomatis
<400>726

Gln Asn Ser Ala Arg Ser Asn Lys Lys Asn Thr Ile Glu Ser Ala Ala
1 5 10 15
Pro Ala Gly Thr Val Ile Asn His Glu Ser Thr Ile Ser Leu Met Ile
20 25 30
Arg Lys Leu Met Ala Arg Lys Pro Leu Ala Asn Pro Ile Pro Asn Thr
35 40 45
Asp Pro Thr Thr Thr Cys Val Val Asp Ile Gly Asn Pro Lys Glu Glu
50 55 60
Ala Ala Ala Ile Val Ile Ala Glu Leu Ile Pro Thr Glu Lys Pro Arg
65 70 75 80
Asp Gly Val Asn Ser Val Ile Phe Phe Pro Ile Val Ser Ile Thr Arg
85 90 95
Gln Pro His Val Ala Asn Pro Gln Thr Lys Pro Ser Pro Pro Lys Asp
100 105 110
Ile Asn Thr Lys Arg Thr Phe Glu Glu
115 120
<210>727
<211>433
<212>PRT
<213>Chlamydia trachomatis
<400>727
Asp Ala Arg Arg Glu Ile Gly Met Trp Leu Leu Leu Val Cys Val Val
1 5 10 15
Val Gly Gly Phe Tyr Thr Ala Trp Asn Ile Gly Ala Asn Asp Val Ala
20 25 30
Asn Ala Val Gly Pro Ser Val Gly Ala Gly Ala Leu Thr Leu Lys Gln
35 40 45
Ala Val Leu Ile Ala Ala Val Phe Glu Phe Leu Gly Ala Val Leu Leu
50 55 60
Gly Asp Arg Val Ile Gly Thr Ile Glu Ser Gly Leu Val Ala Pro Ser
65 70 75 80
Gly His Val Leu Ser Ser Gln Asp Tyr Val Phe Gly Met Ala Ala Ala
85 90 95
Leu Leu Ala Thr Gly Val Trp Leu Gln Ile Ala Ser Phe Cys Gly Trp
100 105 110
Pro Val Ser Thr Thr His Ala Ile Val Gly Ala Val Leu Gly Phe Gly
115 120 125
Ile Ile Leu Lys Glu Asp Ala Val Ile Tyr Trp Asn Ser Cys Gly Arg
130 135 140
Val Phe Val Ser Trp Leu Ala Ser Pro Ile Ile Gly Gly Tyr Phe Ala
145 150 155 160
Phe Leu Ile Phe Ser Phe Ile Arg Lys Ala Ile Leu Tyr Lys Lys Asp
165 170 175
Pro Val Ser Ala Met Val Arg Ile Ala Pro Phe Leu Ser Ala Ile Ile
180 185 190
Ile Phe Ala Leu Gly Leu Val Leu Ile Leu Ser Gly Ala Val Ala Pro
195 200 205
Val Ile Ser Phe Ser Pro Ala Leu Arg Ile Val Cys Gly Leu Ser Leu
210 215 220
Phe Ala Phe Phe Phe Thr Ile Trp Gly Ile Arg Phe Phe Lys Leu Ala
225 230 235 240
Ile Leu Pro Gln Glu Val Leu Pro Gly Thr Leu Leu Asp Arg Leu Leu
245 250 255
Ser Lys Ser Thr Asp Tyr Gly Arg Lys Tyr Leu Ile Val Glu Arg Ile
260 265 270
Phe Ala Tyr Leu Gln Met Ile Ile Ala Cys Phe Met Ser Phe Ala His
275 280 285
Gly Ser Asn Asp Val Ala Asn Ala Ile Ala Pro Val Ala Gly Ile Tyr
290 295 300
Arg Thr Leu Tyr Pro Gln Ser Tyr Ser Ser Lys Val Leu Leu Val Phe
305 310 315 320

```
Met Ser Leu Gly Gly Leu Gly Leu Val Cys Gly Leu Ala Thr Trp Gly
                325                 330                 335
Trp Arg Val Ile Asp Thr Ile Gly Lys Lys Ile Thr Glu Leu Thr Pro
            340                 345                 350
Ser Arg Gly Phe Ser Val Gly Met Ser Ser Ala Ile Thr Ile Ala Ala
        355                 360                 365
Ala Ser Ser Leu Gly Phe Pro Ile Ser Thr Thr His Val Val Val Gly
    370                 375                 380
Ser Val Leu Gly Ile Gly Phe Ala Arg Gly Leu Arg Ala Ile Asn Leu
385                 390                 395                 400
Arg Ile Ile Lys Asp Ile Val Leu Ser Trp Phe Ile Thr Val Pro Ala
                405                 410                 415
Gly Ala Ala Leu Ser Ile Val Phe Phe Leu Leu Leu Arg Ala Leu Phe
            420                 425                 430
Cys
```

<210>728
<211>164
<212>PRT
<213>Chlamydia trachomatis
<400>728

```
Trp Tyr Glu Lys Arg Cys Lys Lys Thr Leu Gly Phe Gly Ser Ile Ser
  1               5                  10                  15
Ser Cys Ile Pro Arg Ser Ala Val Gly Asp His Phe Asp Thr Arg Phe
             20                  25                  30
Leu Ser Arg Xaa Ala Glu Asp Ile Ala Ile Leu Leu Thr Val Lys Glu
         35                  40                  45
Leu Gln Phe Tyr Pro Glu Phe Glu Glu Leu Phe Phe Glu Phe Leu Gln
     50                  55                  60
Lys Thr Val Gln Ser Phe Glu Ala Val Ala Lys Thr Ile Arg Glu Met
 65                  70                  75                  80
Asp Arg Leu Leu Glu Ser Ser Phe Gly Gly Asn Arg Ala Asp Lys Thr
                 85                  90                  95
Arg Val Leu Val Ser Glu Val Ser Asn Leu Glu His Glu Cys Asp Leu
            100                 105                 110
Leu Gln Arg Glu Leu Met Lys Val Phe Phe Ser Asp Asp Phe Ala Ile
        115                 120                 125
Gly Thr Lys Gly Phe Val Leu Trp Met Gln Ile Ile Lys Gly Ile Ser
    130                 135                 140
Gly Ile Ser Asn Asn Ser Glu Lys Leu Ala Tyr Arg Val Ser Met Thr
145                 150                 155                 160
Leu Glu Glu Lys
```

<210>729
<211>103
<212>PRT
<213>Chlamydia trachomatis
<400>729

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Met Gln Val Leu Ala Ser Leu Phe Gly Gln Ser Pro Phe Ala Pro Leu
  1               5                  10                  15
Gln Ala His Leu Glu Leu Val Ser Ser Thr Ile Asn Val Leu Phe Pro
             20                  25                  30
Leu Phe Ser Ala Leu Lys Glu Gly Asp Tyr Glu Arg Val Gly Val Leu
         35                  40                  45
Ala Gln Leu Val Ser Ser Lys Glu Arg Gln Ala Asp Gly Met Lys Asn
     50                  55                  60
Asp Val Arg Arg His Leu Ala Ser Gly Val Phe Leu Pro Val Phe Arg
 65                  70                  75                  80
Ala Ala Leu Leu Glu Ile Ile Ser Ile Gln Asp Ser Leu Ala Asp Xaa
                 85                  90                  95
Leu Arg Ile Ser Gln Phe Cys
```

100

<210>730
<211>321
<212>PRT
<213>Chlamydia trachomatis
<400>730

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Met Cys Ala Gln Pro Leu Leu Gln Val Lys Asn Leu Ser Val Ser Leu
  1               5                  10                  15
Asn Arg Asn Arg Val Ser Phe Leu Ala Val Asp Ser Leu Ser Phe Asp
             20                  25                  30
Val Phe Pro Gly Gln Thr Leu Ala Ile Ile Gly Glu Ser Gly Ser Gly
         35                  40                  45
Lys Ser Ile Thr Ala Gln Ser Leu Met Gln Leu Leu Pro Glu Glu Ser
     50                  55                  60
Phe Ser Leu Ser Gly Glu Ala Leu Phe Asn Lys Glu Asn Leu Leu Asp
 65                  70                  75                  80
Arg Lys Asn Thr Asn Ala Lys Val Leu Phe Gly Ser Lys Ile Ser Met
                 85                  90                  95
Ile Phe Gln Asn Pro Leu Ala Ser Phe Asp Pro Val Phe Thr Ile Glu
            100                 105                 110
Gln Gln Phe His Glu Val Ile Arg Thr His Leu Gly Ile Ser Asn Lys
        115                 120                 125
Met Ala His Glu Gln Met Leu Ala Val Leu Arg Glu Thr Gly Phe Gln
    130                 135                 140
Asp Pro Glu Arg Cys Ile Lys Leu Tyr Pro His Glu Leu Ser Gly Gly
145                 150                 155                 160
Met Leu Gln Arg Met Ala Ile Ala Met Thr Leu Leu Thr Ser Pro Asp
                165                 170                 175
Leu Leu Ile Ala Asp Glu Pro Thr Thr Ala Leu Asp Val Ser Val Gln
            180                 185                 190
Tyr Gln Ile Leu Gln Leu Leu Lys Thr Leu Gln Lys Lys Thr Gly Met
        195                 200                 205
Ser Leu Leu Ile Ile Thr His Asp Met Gly Val Val Ala Glu Met Ala
    210                 215                 220
Asp Asp Val Phe Val Leu Tyr Ala Gly Arg Met Glu Glu Tyr Ser Ser
225                 230                 235                 240
Val Gln Glu Ile Phe His Ser Pro Ala His Pro Tyr Thr Glu Asp Leu
                245                 250                 255
Leu Ala Ser Arg Pro Ser Gln Tyr Arg Gln Gln Thr Phe Val Pro Ile
            260                 265                 270
Ala Gly Gln Pro Pro His Tyr Thr Arg Leu Pro Lys Gly Cys Cys Tyr
        275                 280                 285
Ser Pro Arg Cys Arg Lys Ala Gln Pro Ile Cys Phe Glu Lys Ser Pro
    290                 295                 300
Asp Ser Leu Ser Leu Asn Asp His His Arg Val Arg Cys Trp Leu His
305                 310                 315                 320
Glu
```

<210>731
<211>266
<212>PRT
<213>Chlamydia trachomatis
<400>731

```
Gly Ala Gly Tyr Met Asn Asn Pro Leu Leu Leu Gln Ala Ser Arg Leu
  1               5                  10                  15
Thr Lys His Tyr Tyr Lys Arg Ser Phe Trp Phe Gln Lys Lys Lys Val
             20                  25                  30
Ala Thr Thr Pro Leu Asn Gln Val Ser Phe Ser Leu Pro Arg His Lys
         35                  40                  45
Ile Ile Gly Leu Ile Gly Glu Ser Gly Ser Gly Lys Thr Thr Leu Ala
     50                  55                  60
```

```
Leu Gly Leu Ala Gly Leu Ile Pro Leu Thr Ser Gly His Leu Ile Leu
 65                  70                  75                  80
Asn Asp Lys Ala Ile Pro Leu His Asn Lys Lys Gly Arg Gln Tyr Leu
                 85                  90                  95
Ser Ser Gln Val Arg Met Val Phe Gln Asn Pro Arg Ser Ser Leu Asn
            100                 105                 110
Pro Arg Lys Thr Ile Phe Asp Thr Leu Ser His Ser Leu Leu Tyr His
        115                 120                 125
Arg Leu Val Ser Lys Glu Glu Leu Gly Ala Thr Val Glu Lys Ala Leu
    130                 135                 140
Ser Leu Val Gly Leu Ser Thr Asp Tyr Leu Tyr Ser Tyr Pro His Gln
145                 150                 155                 160
Leu Ser Gly Gly Gln Leu Gln Arg Ile Ser Ile Ala Arg Ala Leu Leu
                165                 170                 175
Gly Ala Pro Gln Leu Ile Ile Cys Asp Glu Ile Val Ser Ala Leu Asp
            180                 185                 190
Leu Ser Met Gln Ala Gln Ile Leu Asn Met Leu Thr Ser Leu Gln Gln
        195                 200                 205
Gln Ala Arg Leu Thr Tyr Leu Phe Ile Ser His Asp Leu Ala Val Val
    210                 215                 220
Arg Ser Phe Cys Ser Glu Leu Ile Ile Met Tyr Lys Gly Gln Ile Val
225                 230                 235                 240
Glu Thr Gly Ala Thr Glu Glu Ile Phe Cys Asn Pro Gln His Ser Tyr
                245                 250                 255
Thr Arg Met Leu Leu His Ser Gln Leu Pro
            260                 265
<210>732
<211>284
<212>PRT
<213>Chlamydia trachomatis
<400>732
Glu Asn Ile Val Ser Arg Leu Pro Ser Glu Asp Thr Leu Leu Glu Val
  1                 5                  10                  15
Asn Ile Glu Asp Ile Arg Val Ser Pro Phe Gln Pro Arg Arg Thr Phe
             20                  25                  30
Leu Glu Glu Asp Leu Lys Glu Leu Val Leu Ser Ile Lys Thr Val Gly
         35                  40                  45
Leu Ile His Pro Pro Val Val Arg Glu Ile Arg Asn Gly Asp Lys Val
     50                  55                  60
Leu Tyr Tyr Glu Leu Ile Ala Gly Glu Arg Arg Trp Arg Ala Leu Gln
 65                  70                  75                  80
Leu Ala Gly Tyr Lys Thr Val Pro Val Val Leu Lys Gln Val Leu Ala
                 85                  90                  95
Asp Asp Met Ala Ala Glu Ala Thr Leu Ile Glu Asn Ile Gln Arg Val
            100                 105                 110
Asn Leu Asn Pro Leu Glu Met Ala Glu Ala Phe Arg Arg Leu Ile Val
        115                 120                 125
Val Phe Gly Leu Thr Gln Asp Lys Val Ala Lys Lys Val Gly Lys Lys
    130                 135                 140
Arg Ser Thr Val Ala Asn Tyr Leu Arg Leu Phe Ser Leu Pro Gln Glu
145                 150                 155                 160
Val Gln Glu Lys Met Asn Ser Gly Glu Ile Ser Leu Gly His Ala Lys
                165                 170                 175
Val Ile Leu Ser Leu Glu Asp Glu Asn Leu Arg Gln Ile Leu Ser Gln
            180                 185                 190
Lys Ile Ile Ser Cys Lys Leu Ala Val Arg Glu Ala Glu Met Glu Ala
        195                 200                 205
Lys Arg Leu Val Lys Gly Lys Gly Ala Ser Leu Lys Glu Asp Ser Ser
    210                 215                 220
Ser Gln Pro Ser Ser Arg Leu Gly Phe Cys Gln Glu Arg Leu Ala Thr
225                 230                 235                 240
```

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```
Thr Phe Gly Tyr Pro Val Thr Val Lys Pro Gln Gly Arg Arg Ile Cys
                245                 250                 255
Val Ser Phe Phe Val Glu Gly Glu Glu Ala Leu Glu Ala Leu Glu Lys
            260                 265                 270
Ala Leu Thr Thr Ser Ser Ser Glu Ala Ile Leu Thr
        275                 280
<210>733
<211>407
<212>PRT
<213>Chlamydia trachomatis
<400>733
Arg Asn Arg Ile Phe Thr Met Tyr Asn Val Lys Lys Asp Phe Pro Ile
  1               5                  10                  15
Phe Lys Asn Gln Gly Asp Pro Tyr Val Tyr Leu Asp Ser Ala Ala Thr
            20                  25                  30
Thr His Lys Pro Gln Cys Val Ile Asp Ser Ile Val Asp Tyr Tyr Ser
        35                  40                  45
Ser Ser Tyr Ala Thr Val Asn Arg Ala Leu Tyr Thr Ala Ser His Asp
    50                  55                  60
Ile Thr Phe Ala His Trp Gln Val Arg Ser Lys Val Gly Ser Trp Ile
65                  70                  75                  80
Gly Ala Gln Tyr Asp Gln Glu Ile Ile Phe Thr Arg Gly Thr Thr Ser
                85                  90                  95
Ser Leu Asn Leu Leu Ala Ile Ala Ala Asn Asp Ser Trp Leu Ala Gly
            100                 105                 110
Gly Thr Val Val Ile Ser Glu Ala Glu His His Ala Asn Leu Val Ser
        115                 120                 125
Trp Glu Leu Ala Cys Gln Arg Ser Gly Ala Thr Ile Lys Lys Val Arg
    130                 135                 140
Val Asp Asp Glu Gly Met Val Asp Cys Asn His Leu Glu Gln Leu Leu
145                 150                 155                 160
Lys Gln Gly Val Gln Leu Val Ser Leu Ala His Val Ser Asn Val Ser
                165                 170                 175
Gly Ala Val Leu Pro Leu Pro Glu Ile Ala His Leu Val His Arg Tyr
            180                 185                 190
Glu Ala Leu Phe Ala Val Asp Gly Ala Gln Gly Val Gly Lys Gly Pro
        195                 200                 205
Leu Asn Leu Ser Glu Trp Gly Val Asp Phe Tyr Ala Phe Ser Gly His
    210                 215                 220
Lys Leu Tyr Ala Pro Thr Gly Ile Gly Val Leu Tyr Gly Lys Lys Glu
225                 230                 235                 240
Leu Leu Glu Ser Leu Pro Pro Val Glu Gly Gly Gly Asp Met Val Ile
                245                 250                 255
Val Tyr Asp Phe Glu Glu Leu Ser Tyr Gln Glu Pro Pro Leu Arg Phe
            260                 265                 270
Glu Ala Gly Thr Pro His Ile Ala Gly Val Leu Gly Leu Gly Ala Ala
        275                 280                 285
Ile Asp Tyr Leu Gln Ala Leu Pro Phe Ser Ile Thr Asp Arg Leu Thr
    290                 295                 300
Glu Leu Thr His Phe Leu Tyr Glu Gln Leu Leu Thr Val Pro Gly Ile
305                 310                 315                 320
Gln Ile Ile Gly Pro Lys Gln Gly Ala Ala Arg Gly Ser Leu Cys Ser
                325                 330                 335
Ile Ser Ile Pro Gly Val Gln Ala Ser Asp Leu Gly Phe Leu Leu Asp
            340                 345                 350
Gly Arg Gly Ile Ser Val Arg Ser Gly His Gln Cys Ser Gln Pro Ala
        355                 360                 365
Met Val Arg Trp Asp Leu Gly His Val Leu Arg Ala Ser Leu Gly Ile
    370                 375                 380
Tyr Asn Asp Gln Gln Asp Ile Leu Leu Phe Val Glu Ala Leu Lys Asp
385                 390                 395                 400
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Ile Leu Arg Ala Tyr Arg Ser
405

<210>734
<211>396
<212>PRT
<213>Chlamydia trachomatis
<400>734

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Thr Met Trp Gly Thr His Gln Gln Arg Gln Ile His Pro Asp Ala Arg
  1               5                  10                  15
Leu Ala Asp Val Thr Arg Ser Val Trp Arg Gln Tyr Gln Arg Asp His
            20                  25                  30
Val Phe Arg Glu Ala Cys Ser Trp Leu Lys Glu Met Thr Gln Glu Asp
        35                  40                  45
Ser Trp Ile Tyr Cys Val Gly Gly Cys Glu Ile Gly Ala Ile Ser Pro
    50                  55                  60
Glu Glu Arg Ser Ala Thr Cys Val Phe Val Asn Gly Cys Phe Ala Pro
65                  70                  75                  80
Ser Leu Ser Val Leu Pro Ala Glu Ile Ile Val Ala Pro Leu Arg Glu
                85                  90                  95
Ala Arg Ala Phe Phe Gln Lys His Asp Glu Glu Asp Val Val Glu Glu
            100                 105                 110
Leu His Ser Leu Leu Arg Gly Glu Glu Gly Thr Val Ile Tyr Ile Pro
        115                 120                 125
Glu Gly Arg Glu Leu Gln Thr Pro Leu Phe Val Gln His His Tyr Val
    130                 135                 140
Cys Ser Glu Glu Glu Asn Lys Lys Thr Val Ser Val Pro Tyr Ile Val
145                 150                 155                 160
Phe Val Leu Gly Lys Gly Ala Ala Ile Ser Ile Glu Met Gly Met Ser
                165                 170                 175
Ala Leu Pro Asp Asn Val Tyr Leu Phe Gly Lys Thr Leu Cys Phe Leu
            180                 185                 190
Gly Glu Glu Ala Glu Leu Val Leu Thr Met Lys Pro Leu Pro Lys Gly
        195                 200                 205
Thr Glu Arg Ile Ile Trp Ala His His Val Glu Val Glu Arg Arg Gly
    210                 215                 220
Ala Cys Ala Leu Ile Gln Asp Met Arg Ser Met Gly Lys Gly Trp Phe
225                 230                 235                 240
Arg Asn Ser Phe Phe Leu Lys Gly Glu Ala Ala His Gly Glu Ser Leu
                245                 250                 255
Val Lys Val Leu Gly Gly Asp Phe Leu Gly Val His Asn Thr Met His
            260                 265                 270
His Asp Asp Arg Glu Thr Thr Ser Arg Gln Asn Ile Arg Ser Ile Leu
        275                 280                 285
Glu Glu Gly Ser Phe Ser Phe Glu Gly Gly Ile Tyr Ile Ser Pro Arg
    290                 295                 300
Gly Thr Leu Ser Asn Ala Tyr Gln Lys His Asp Thr Leu Leu Leu Ser
305                 310                 315                 320
Asn Arg Ala Ser Ala Ser Thr Phe Pro Arg Leu Glu Ile Leu Thr Asp
                325                 330                 335
Asp Val Lys Ala Ser His Gly Ala Thr Val Gly Ser Leu Asn Ala His
            340                 345                 350
Leu Leu Thr Tyr Leu Arg Ser Arg Gly Phe Ser Leu Ile Glu Ala Lys
        355                 360                 365
Gln Ala Leu Gln Lys Ser Phe Leu Thr Leu Asp Ile Glu Lys Pro Tyr
    370                 375                 380
Phe Pro Lys Leu Gln Lys Gln Asp Leu Tyr His Val
385                 390                 395
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<210>735
<211>251
<212>PRT
<213>Chlamydia trachomatis

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<400>735
Val Met Tyr Met Tyr Val Val Lys Lys Lys Arg Ser Leu Glu Gly Leu
1 5 10 15
Ser Leu Ser Ile His Pro Gly Glu Leu His Ile Ile Met Gly Pro Asn
20 25 30
Gly Ala Gly Lys Ser Thr Leu Ala Lys Val Leu Ser Gly Asp Glu Ser
35 40 45
Val Glu Val Ser Ser Gly Thr Met Thr Leu Ala Gly Gln Asp Leu Leu
50 55 60
Glu Leu Ser Pro Glu Glu Arg Ala His Ala Gly Met Phe Ile Ser Phe
65 70 75 80
Gln His Pro Pro Glu Ile Pro Gly Val Asn Asn Arg Ile Phe Leu Lys
85 90 95
Glu Ala Cys Asn Ala Cys Arg Lys Ala Arg Asn Gln Val Val Leu Asp
100 105 110
Asp Ala Ala Phe Glu Glu Leu Leu Thr His Leu Glu Glu Val Tyr Gly
115 120 125
Phe Pro Gly Phe His Phe Phe Ser Asn Arg Asn Val Asn Glu Gly Phe
130 135 140
Ser Gly Gly Glu Lys Lys Lys Asn Glu Leu Trp Gln Met Leu Ala Leu
145 150 155 160
Glu Pro Lys Met Val Val Leu Asp Glu Pro Asp Ser Gly Leu Asp Val
165 170 175
Asp Ala Leu Lys Gly Ile Cys Ser Val Leu Gln Arg Tyr Arg Gln Gln
180 185 190
His Pro Glu Thr Ala Phe Cys Ile Val Thr His Asn Pro Arg Leu Gly
195 200 205
Asp Leu Leu Gln Pro Asp His Val His Ile Leu Leu Asn Gly Arg Val
210 215 220
Val Phe Ser Gly Asp Met His Leu Met Glu Glu Leu Glu Arg Lys Ser
225 230 235 240
Tyr Gln Glu Leu Leu Asp Val Val Thr Gln Glu
245 250

<210>736
<211>94
<212>PRT
<213>Chlamydia trachomatis
<400>736
Leu His Ala Gly Asp Ser Met Leu Val Gly Glu Arg Cys Gly Ala Tyr
1 5 10 15
Thr Asp Pro Gln Ile Val Val Asn Asn Gly Glu Ser Cys Val Glu His
20 25 30
Glu Ala Ala Thr Ser Lys Leu Arg Glu Asp Gln Leu Phe Tyr Leu Arg
35 40 45
Ser Arg Gly Phe Asn Thr Glu Glu Ala Val Ser Leu Val Val His Gly
50 55 60
Phe Cys Arg Glu Val Ile Glu Leu Leu Pro Leu Glu Phe Ala Arg Glu
65 70 75 80
Ala Thr Lys Leu Leu Met Ile Lys Leu Glu Asn Ser Val Gly
85 90

<210>737
<211>247
<212>PRT
<213>Chlamydia trachomatis
<400>737
Phe Ser Glu Ala Leu Phe Arg Ile Val Val Pro Ala Arg Asp Asn Phe
1 5 10 15
Phe Ala Ala Leu Asn Ser Ala Val Phe Ser Asp Gly Ser Phe Val Tyr
20 25 30
Ile Pro Lys Gly Val Cys Cys Pro Met Glu Ile Ser Thr Tyr Phe Arg
35 40 45

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Ile Asn Asp Lys Glu Ser Gly Gln Phe Glu Arg Thr Leu Ile Ile Ala
     50                  55                  60
Glu Asp Asp Ser Tyr Val Ser Tyr Leu Glu Gly Cys Thr Ala Pro Ser
 65                  70                  75                  80
Phe Ser Ser His Gln Leu His Ala Ala Val Val Glu Leu Val Ala His
                 85                  90                  95
Asn Arg Ser Val Ile Arg Tyr Ser Thr Val Gln Asn Trp Tyr Pro Gly
            100                 105                 110
Asp Arg Lys Thr Gly Lys Gly Gly Ile Tyr Asn Phe Val Thr Lys Arg
        115                 120                 125
Gly Leu Cys Ala Gly Glu His Ser Lys Ile Ser Trp Ser Gln Val Glu
    130                 135                 140
Val Gly Ala Ala Ile Thr Trp Lys Tyr Pro Ser Cys Ile Leu Lys Gly
145                 150                 155                 160
Glu Asn Ser Val Gly Glu Phe Tyr Ser Ile Ala Leu Thr Asn Gly Lys
                165                 170                 175
Met Gln Ala Asp Thr Gly Thr Lys Met Leu His Ile Gly Lys Gly Ser
            180                 185                 190
Ser Ser Thr Ile Val Ser Lys Gly Ile Ser Ala Glu Glu Ser His Asn
        195                 200                 205
Thr Phe Arg Ser Leu Val Ser Ile Ser Ser Gln Ala Val Gly Ser Cys
    210                 215                 220
Asn Tyr Thr Gln Ala Thr Leu Cys Leu Leu Glu Ser Ala Ala Gly Leu
225                 230                 235                 240
Ile Arg Ile His Lys Leu Leu
                245
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<212>PRT
<213>Chlamydia trachomatis
<400>738
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Gly Phe Val Thr Pro Ile Gln Ser Glu Gly Leu Ala Pro Gly Ile Ser
            20                  25                  30
Glu Glu His Ile Glu Gln Leu Val His Leu Arg Gly Glu Pro Lys Phe
         35                  40                  45
Leu Leu Asp Phe Arg Leu Lys Ala Phe Arg Leu Trp Gln Lys Met Glu
     50                  55                  60
Glu Pro Thr Trp Ala Arg Leu Arg Tyr Pro Pro Ile Ala Tyr Asp Asp
 65                  70                  75                  80
Ile Val Tyr Phe Ser Ala Pro Lys Thr Lys Lys Pro Leu Gly Lys Leu
                 85                  90                  95
Glu Asp Ala Asp Pro Glu Ile Leu Glu Thr Phe Lys Lys Leu Gly Ile
            100                 105                 110
Pro Ile Asp Glu Gln Lys Arg Leu Leu Asn Val Gln Asp Val Ala Met
        115                 120                 125
Asp Leu Val Phe Asp Ser Val Ser Ile Gly Thr Thr Phe Lys Lys Thr
    130                 135                 140
Leu Glu Asp Ala Gly Val Ile Phe Cys Ser Phe Arg Glu Ala Ile His
145                 150                 155                 160
Asn Tyr Pro Asp Leu Val Lys Arg Tyr Leu Gly Ser
                165                 170
<210>739
<211>150
<212>PRT
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<400>739
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Phe Gly Val Phe Leu Arg Leu Val Leu Val Phe Trp Val Gly His Tyr
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            20                  25                  30
Asn Leu Gly Leu Cys Tyr Leu Thr Leu Asp Lys Thr Arg Leu Ala Leu
        35                  40                  45
Lys Ala Phe Gln Glu Ser Leu Leu Leu Asn Ala Glu Asp Ala Asp Ala
    50                  55                  60
His Phe Tyr Ile Gly Leu Ala His Met Asp Leu Lys Gln Asn Glu Gln
65                  70                  75                  80
Ala Tyr Asp Ala Phe Tyr Arg Ala Leu Gly Ile Asn Leu Asp His Glu
                85                  90                  95
Arg Ser His Tyr Leu Leu Gly Tyr Leu His His Met Gln Gly Glu Ser
            100                 105                 110
Glu Lys Ala Glu Thr Glu Leu Ser Phe Leu Val Ala Lys Glu Ser Val
        115                 120                 125
Phe Ala Pro Leu Leu Gln Lys Thr Val Ser Ser Ser Val Phe Leu Ser
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Lys Lys Glu Thr Leu Phe
145                 150
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Glu Glu Arg Leu Lys Glu Ser Leu Glu Leu Asp Ser Glu Ala Gly Leu
        35                  40                  45
Ala Tyr Cys Tyr Leu Gly Ile Ile Ala Leu Glu Thr Gly Arg Thr Ala
    50                  55                  60
Glu Ala Leu Val Trp Cys Lys Gln Gly Leu Glu Ala Glu Pro Gly Asp
65                  70                  75                  80
Ser Tyr Leu Arg Tyr Cys Tyr Gly Val Ala Leu Asp Lys Ala Asp Arg
                85                  90                  95
Leu Glu Glu Ala Ile Gly His Tyr Gln Val Tyr Ala Glu Leu His Pro
            100                 105                 110
Glu Asp Ile Glu Cys Leu Phe Ser Leu Gly Ser Ala Tyr His Arg Leu
        115                 120                 125
Leu Arg Tyr Glu Glu Ala Ile Ala Cys Phe Asp Arg Ile Ala Gln Leu
    130                 135                 140
Asp Pro Trp Asn Pro Gln Gly Leu Tyr Asn Lys Ala Val Ile Leu Ser
145                 150                 155                 160
Asp Met Glu Asp Glu Glu Gly Ala Ile Asp Leu Leu Glu Ser Thr Val
                165                 170                 175
Lys Arg Asn Pro Leu Tyr Trp Lys Ala Trp Val Lys Leu Gly Tyr Leu
            180                 185                 190
Leu Ser Arg Asn
        195
<210>741
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<213>Chlamydia trachomatis
<400>741
Met Lys Arg Lys Arg Arg Thr Pro Leu Ser Val Pro Glu Lys Ala Asn
  1               5                  10                  15
Arg Leu Leu Val Gly Phe Ile Ile Ala Leu Ser Ile Ile Thr Leu Arg
            20                  25                  30
Ile Trp His Val Ala Val Val Gln His Glu Lys Lys Lys Glu Glu Ala
        35                  40                  45
Tyr Arg Pro Gln Arg Arg Ser Val Pro Glu His Cys Asp Arg Ala Gly
    50                  55                  60
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Val Cys Asp Arg Phe Gly Lys Thr Leu Ala Glu Asn Val Leu Gln Tyr
 65                  70                  75                  80
Asn Val Gly Ile Ser Tyr Arg Ala Ile Arg Asp Ile Pro Thr Arg Val
                 85                  90                  95
Trp His Thr Asp Glu Gln Gly Asn Lys Arg Leu Val Pro Val Arg Lys
            100                 105                 110
Asp Tyr Ile Lys Lys Phe Ala Asp Phe Leu Ala Gln Glu Leu His Met
        115                 120                 125
Asp Arg Asp Phe Val Glu Asp Thr Ile His Ala Lys Ala Ser Val Leu
    130                 135                 140
Gly Ser Val Pro Tyr Ile Leu Gln Thr Asn Val Ser Glu Arg Thr Phe
145                 150                 155                 160
Leu Arg Leu Lys Met Leu Glu Lys Asp Trp Pro Gly Leu His Val Glu
                165                 170                 175
Ser Ser Val Arg Arg His Tyr Pro Glu Gly Arg Thr Val Ala Asp Leu
            180                 185                 190
Leu Gly Tyr Val Gly Pro Ile Ser Ala Glu Glu His Arg Lys Ile Thr
        195                 200                 205
Arg Glu Leu Gly Asn Leu Arg Glu Cys Ile Arg Ala Tyr Glu Glu Gly
    210                 215                 220
Glu Asp Pro Lys Phe Pro Ala Gly Ile Ser Ser Val Asp Gln Val Arg
225                 230                 235                 240
Lys Leu Leu His Glu Leu Glu Met His Ala Tyr Gly Leu Asn Ser Leu
                245                 250                 255
Ile Gly Lys Leu Val Val Glu Ala Phe Cys Asp Arg Lys Leu Arg Gly
            260                 265                 270
Leu Ile Gly Lys Arg Ser Met Leu Val Asp Arg Arg Gly Asn Phe Ile
        275                 280                 285
Gln Glu Met Glu Gly Ser Ser Val Gly Ser Pro Gly Arg Thr Ile Gln
    290                 295                 300
Leu Thr Ile Ser Thr Glu Leu Gln Ala Phe Ala His Glu Leu Leu Ala
305                 310                 315                 320
Glu His Glu Arg Gly Glu Cys Phe Thr Ile Ile Asp Ser Gly Val Ser
                325                 330                 335
Asn Asn Ile Leu Pro Pro Phe Phe Pro Trp Ile Lys Gly Gly Ala Ile
            340                 345                 350
Val Ala Met Asp Pro Lys Asn Gly Gln Ile Leu Ala Met Ala Ser Ser
        355                 360                 365
Pro Arg Tyr Asp Asn Asn Asp Phe Ile Asn Met Lys Asp Ser Pro Asn
    370                 375                 380
Gln Glu Glu Cys Arg Ser Ser Val Leu Arg Trp Leu Glu Asn Leu Glu
385                 390                 395                 400
Tyr Ile Gly Glu Val Phe Asp Arg Arg Val Pro Leu Arg Arg Glu Arg
                405                 410                 415
Leu Asp Pro Leu Ser Gly Lys Tyr Phe Asp Glu Glu Leu Ser Phe Ser
            420                 425                 430
Tyr Arg Ala Phe Leu Asp Phe Ile Leu Pro Asp Thr Ser Lys Val Lys
        435                 440                 445
Gln Met Leu Cys Glu Lys Gly Ser Ile Gly Leu Ser Ile Tyr Leu Gln
    450                 455                 460
Gly Thr Ile Glu Gln Leu Leu Glu Met Phe Glu Cys Glu Glu Lys Glu
465                 470                 475                 480
Cys Gly Leu Val Phe Asp Val Leu Phe Pro Lys Glu Asp Gly His Glu
                485                 490                 495
Ile Ile Gly Glu Val Thr Ser Leu Lys Arg Gln Lys Gln Phe Lys Ala
            500                 505                 510
Ile Leu Ala Glu Arg Glu Glu Glu Val Gln Ala Phe Arg Glu Arg Leu
        515                 520                 525
Gly Ser Ile Phe Ala Asp Leu Ser Ala Asn Tyr Asp Lys Ile Leu Phe
    530                 535                 540
Leu Asp Leu Leu Arg Thr Ala Val Asp Pro Glu Lys Val Ser Ile Ser
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545                 550                 555                 560
Leu Leu Ala Glu Ile Gly His Met Ser Val Leu Asp Phe Val Asp Tyr
                565                 570                 575
Gln Gly His Phe Ile Ala Leu Arg Lys Ser Phe Ala Lys Leu Met Glu
            580                 585                 590
Asn Ala Phe Ile Asp His Asp Phe Thr Ala Trp Arg Glu Glu His Phe
        595                 600                 605
Thr Gln Phe Ile Lys Gln Lys Arg Asp Glu Glu Leu Glu Arg Lys Gln
    610                 615                 620
Arg Tyr Pro Thr Pro Tyr Val Asp Tyr Leu Val Glu Glu Arg Ser Arg
625                 630                 635                 640
Gln Tyr Ala Leu Phe Cys Arg Glu His Met Asp Ser Phe Ile Thr Phe
                645                 650                 655
Leu Leu Ser Glu Ile Glu Pro Pro Leu Gly Asn Pro Tyr Tyr Gln Glu
            660                 665                 670
Ile Ala Cys Trp Arg Gln Glu Leu Arg Ser Gly Ala Tyr Pro Ala Leu
        675                 680                 685
Glu Trp Arg Glu His Tyr Asp Phe Leu His Lys His Leu Ser Gln Thr
    690                 695                 700
Ser Tyr Asp Leu Cys Glu Leu Phe Ala Ala Phe Arg Glu Phe Ser Glu
705                 710                 715                 720
Leu Lys Arg Pro Leu Tyr Gly Gln Tyr Pro Leu Thr Leu Thr Arg Asn
                725                 730                 735
Ile Glu Gln Ile Glu Gln Asp Leu Ile Ala Ser Phe Tyr Pro Leu Tyr
            740                 745                 750
Gly Tyr Gly His Leu Ser Ala His Ala Phe Gly Gln Ala Ala Thr Leu
        755                 760                 765
Gly Ser Ile Phe Lys Leu Val Ser Ala Tyr Ser Val Leu Val Gln His
    770                 775                 780
Leu Ser Asp Gln Glu Asp Leu Ser Lys Leu Leu Val Ile Val Asp Lys
785                 790                 795                 800
Gln Ser Leu Gly Leu Arg Ser Gly Lys Pro His Val Gly Phe Phe Lys
                805                 810                 815
Asp Gly Ser Pro Ile Ala Ser Phe Phe Lys Gly Gly Ile Leu Pro Gly
            820                 825                 830
Asn Asp Tyr Ser Gly Arg Gly Tyr Ile Asp Leu Ile Ala Ala Leu Glu
        835                 840                 845
Met Ser Ser Asn Pro Tyr Phe Ser Leu Leu Val Ser Glu Tyr Leu Ser
    850                 855                 860
Asp Pro Glu Asp Leu Cys Glu Ala Ala Lys Leu Phe Gly Phe Gly Glu
865                 870                 875                 880
Lys Thr Gly Ile Gly Leu Pro Gly Glu Tyr Ala Gly Arg Val Pro Ile
                885                 890                 895
Asp Val Ala Tyr Asn Arg Ser Gly Leu Tyr Ala Thr Ala Ile Gly Gln
            900                 905                 910
His Thr Leu Val Val Thr Pro Leu Gln Thr Ala Val Met Met Ala Thr
        915                 920                 925
Leu Val Asn Gly Gly Ile Val Tyr Gln Pro Ser Leu Ile Gln Gly Glu
    930                 935                 940
Trp Tyr Gln Gly Ser Phe Ser Pro Glu Gln Ala Lys Lys Lys Arg Glu
945                 950                 955                 960
Ile Phe Leu Pro Asp Ser Ile Val Asp Leu Phe Lys Arg Gly Met His
                965                 970                 975
Asn Val Ile Trp Gly Gln Tyr Gly Thr Thr Arg Phe Met Arg Gln Arg
            980                 985                 990
Phe Ala Pro Glu Arg Leu Ala Arg Ile Ile Gly Lys Thr Ser Thr Ala
        995                 1000                1005
Glu Val Ile Ala Arg Val Gly Leu Asp Arg Glu Arg Gly Arg Met Lys
    1010                1015                1020
Leu Lys Asp Val Trp Phe Ala Ala Val Gly Tyr Glu Asp Glu Ala Leu
1025                1030                1035                1040
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Ser His Pro Asp Ile Val Val Val Val Tyr Leu Arg Leu Gly Glu Phe
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Gly Arg Asp Leu Arg Leu Trp Gln Cys Val
1060 1065

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<212>PRT
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<400>742
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20 25 30
Leu Met Ile Asp Gly Ile Leu Trp Glu Gly Phe Gly Gly Asp Pro Cys
35 40 45
Asp Pro Cys Thr Thr Trp Cys Asp Ala Ile Ser Met Arg Met Gly Tyr
50 55 60
Tyr Gly Asp Phe Val Phe Asp Arg Val Leu Gln Thr Asp Val Asn Lys
65 70 75 80
Glu Phe Gln Met Gly Ala Lys Pro Thr Thr Ala Thr Gly Asn Ala Ala
85 90 95
Ala Pro Ser Thr Cys Thr Ala Arg Glu Asn Pro Ala Tyr Gly Arg His
100 105 110
Met Gln Asp Ala Glu Met Phe Thr Asn Ala Ala Tyr Met Ala Leu Asn
115 120 125
Ile Trp Asp Arg Phe Asp Val Phe Cys Thr Leu Gly Ala Thr Ser Gly
130 135 140
Tyr Leu Lys Gly Asn Ser Ala Ser Phe Asn Leu Val Gly Leu Phe Gly
145 150 155 160
Asp Asn Glu Asn His Ala Thr Val Ser Asp Ser Lys Leu Val Pro Asn
165 170 175
Met Ser Leu Asp Gln Ser Val Val Glu Leu Tyr Thr Asp Thr Thr Phe
180 185 190
Ala Trp Ser Ala Gly Ala Arg Ala Ala Leu Trp Glu Tyr Gly Cys Ala
195 200 205
Thr Leu Gly Ala Ser Phe Gln Tyr Ala Gln Ser Lys Pro Lys Val Glu
210 215 220
Glu Leu Asn Val Leu Cys Asn Ala Ala Glu Phe Thr Ile Asn Lys Pro
225 230 235 240
Lys Gly Tyr Val Gly Gln Glu Phe Pro Leu Asp Leu Lys Ala Gly Thr
245 250 255
Asp Gly Val Thr Gly Thr Lys Asp Ala Ser Ile Asp Tyr His Glu Trp
260 265 270
Gln Ala Ser Leu Ala Leu Ser Tyr Arg Leu Asn Met Phe Thr Pro Tyr
275 280 285
Ile Gly Val Lys Trp Ser Arg Ala Ser Phe Asp Ala Asp Thr Ile Arg
290 295 300
Ile Ala Gln Pro Lys Ser Ala Thr Thr Val Phe Asp Val Thr Thr Leu
305 310 315 320
Asn Pro Thr Ile Ala Gly Ala Gly Asp Val Lys Ala Ser Ala Glu Gly
325 330 335
Gln Leu Gly Asp Thr Met Gln Ile Val Ser Leu Gln Leu Asn Lys Met
340 345 350
Lys Ser Arg Lys Ser Cys Gly Ile Ala Val Gly Thr Thr Ile Val Asp
355 360 365
Ala Asp Lys Tyr Ala Val Thr Val Glu Thr Arg Leu Ile Asp Glu Arg
370 375 380
Ala Ala His Val Asn Ala Gln Phe Arg Phe
385 390

<210>743
<211>282

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<212>PRT
<213>Chlamydia trachomatis
<400>743

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            20                  25                  30
Phe Ile Phe Glu Glu Lys Asn Gly Leu Tyr Ile Ile Asp Leu Ala Lys
        35                  40                  45
Thr Leu Gly Gln Leu Lys Lys Ala Val Ser Cys Ile Gln Lys Thr Ile
    50                  55                  60
Asp Gln Glu Arg Ser Ile Leu Phe Val Gly Thr Lys Lys Gln Ala Lys
65                  70                  75                  80
Gln Ile Ile Arg Glu Ala Ala Ile Glu Cys Gly Glu Phe Phe Ala Ser
                85                  90                  95
Glu Arg Trp Leu Gly Gly Met Leu Thr Asn Met Ala Thr Ile Arg Asn
            100                 105                 110
Ser Val Lys Thr Leu Asn Arg Ile Glu Leu Asp Leu Glu Ala Ser Asn
        115                 120                 125
Ser Gly Leu Thr Lys Lys Glu Leu Ala Leu Leu Ala Lys Arg His Arg
    130                 135                 140
Lys Leu Leu Asn Asn Leu Glu Gly Val Arg His Met Asn Ser Leu Pro
145                 150                 155                 160
Gly Leu Leu Ile Val Ile Asp Pro Gly Tyr Glu Arg Ile Ala Val Ala
                165                 170                 175
Glu Ala Gly Lys Leu Gly Ile Pro Val Met Ala Leu Val Asp Thr Asn
            180                 185                 190
Cys Asp Pro Thr Pro Ile Asn His Val Ile Pro Cys Asn Asp Asp Ser
        195                 200                 205
Ile Lys Ser Ile Arg Leu Ile Val Asn Thr Leu Lys Asp Ala Val Ile
    210                 215                 220
Asp Ala Lys Lys Arg Leu Gly Val Glu Ile Leu Ser Pro Val Arg Pro
225                 230                 235                 240
Ala Glu Arg Pro Ala Glu Glu Ala Val Glu Glu Leu Pro Leu Pro Thr
                245                 250                 255
Gly Glu Ala Gln Asp Glu Ala Ser Ser Lys Glu Gly Val Leu Leu Trp
            260                 265                 270
Ala Asp Ile Asp Asn Cys Glu Ala Leu Lys
        275                 280
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<212>PRT
<213>Chlamydia trachomatis
<400>744

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Leu Arg Gln Gln Thr Gly Val Gly Leu Thr Lys Cys Lys Glu Ala Leu
            20                  25                  30
Glu His Ala Lys Gly Asn Leu Glu Asp Ala Val Val Tyr Leu Arg Lys
        35                  40                  45
Leu Gly Leu Ala Ser Ala Gly Lys Lys Glu His Arg Glu Thr Lys Glu
    50                  55                  60
Gly Val Ile Ala Ala Arg Val Asp Glu Arg Gly Ala Ala Leu Val Glu
65                  70                  75                  80
Val Asn Val Glu Thr Asp Phe Val Ala Asn Asn Ser Val Phe Arg Ala
                85                  90                  95
Phe Val Thr Ser Leu Leu Ser Asp Leu Leu Asp His Lys Leu Ser Asp
            100                 105                 110
Val Glu Ala Leu Ala Arg Val Met Ser Ser Gln Glu Pro Ser Leu Ser
        115                 120                 125
Val Glu Glu Leu Lys Ala Val Thr Met Gln Thr Val Gly Glu Asn Ile
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    130                 135                 140
Arg Ile Ser Arg Ala Phe Tyr Thr Pro Val Asn Ser Gly Gln Ser Val
145                 150                 155                 160
Gly Ile Tyr Ser His Gly Asn Gly Lys Ala Val Ala Ile Val Phe Leu
                165                 170                 175
Ser Gly Ser Glu Asn Gln Glu Ala Leu Ala Lys Asp Ile Ala Met His
            180                 185                 190
Ile Val Ala Ser Gln Pro Gln Phe Leu Ser Lys Glu Ser Val Pro Gln
        195                 200                 205
Glu Ile Leu Glu Arg Glu Arg Glu Val Phe Ser Ser Gln Val Ala Gly
    210                 215                 220
Lys Pro Gln Glu Val Val Glu Lys Ile Thr Gln Gly Lys Phe Lys Ala
225                 230                 235                 240
Phe Phe Gln Glu Ala Cys Leu Leu Glu Gln Ala Phe Ile Lys Asp Pro
                245                 250                 255
Glu Val Thr Ile Gln Gly Leu Ile Asp Arg Ala Ala Lys Ala Ser Gly
            260                 265                 270
Glu Pro Leu Arg Val Glu His Phe Val Phe Trp Lys Met Gly Ala
        275                 280                 285
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<213>Chlamydia trachomatis
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  1                 5                  10                  15
Ala Leu Ser Asp Gly Asp Ser Ser Asn Lys Ile Ser Glu Lys Arg Leu
             20                  25                  30
Ser Arg Leu Ile Ala Glu Leu Lys Val Val Arg Asn Ala Asp Val Glu
         35                  40                  45
Val Ala Val Val Ile Gly Gly Gly Asn Ile Leu Arg Gly Leu Ser Gln
     50                  55                  60
Ser Gln Ser Leu Gln Ile Asn Arg Val Ser Ala Asp Gln Met Gly Met
 65                  70                  75                  80
Leu Ala Thr Leu Ile Asn Gly Met Ala Leu Ala Asp Ala Leu Lys Thr
                 85                  90                  95
Glu Asp Val Pro Asn Leu Leu Thr Ser Thr Leu Ser Cys Pro Gln Leu
            100                 105                 110
Ala Glu Leu Tyr Asn Pro Gln Lys Ala Ser Asp Ala Leu Ser Gln Gly
        115                 120                 125
Lys Val Val Ile Cys Thr Met Gly Ala Gly Ala Pro Tyr Leu Thr Thr
    130                 135                 140
Asp Thr Gly Ala Ala Leu Arg Ala Cys Glu Leu Lys Val Asp Val Leu
145                 150                 155                 160
Leu Lys Ala Thr Met His Val Asp Gly Val Tyr Asp Gln Asp Pro Arg
                165                 170                 175
Glu Cys Ala Asp Ala Val Arg Tyr Asp His Ile Ser Tyr Arg Asp Phe
            180                 185                 190
Leu Ser Gln Gly Leu Gly Ala Ile Asp Pro Ala Ala Ile Ser Leu Cys
        195                 200                 205
Met Glu Ala Gly Ile Pro Ile Lys Met Phe Ser Phe Ala Arg His Ser
    210                 215                 220
Leu Glu Glu Ala Val Phe Asn Thr Val Gly Thr Val Ile Ser Ser Ala
225                 230                 235                 240
Glu Gly Gly Gln Leu
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<212>PRT
<213>Chlamydia trachomatis
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Phe Gln Lys Glu Thr Arg Gly Phe Arg Thr Gly Lys Ala His Pro Ala
             20                  25                  30
Leu Val Glu Thr Val Thr Val Glu Val Tyr Gly Thr Thr Met Arg Leu
         35                  40                  45
Ser Asp Ile Ala Ser Ile Ser Val Ser Asp Met Arg Gln Leu Leu Ile
     50                  55                  60
Ser Pro Tyr Asp Ala Gly Thr Val Ser Ala Ile Ser Lys Gly Ile Leu
 65                  70                  75                  80
Ala Ala Asn Leu Asn Leu Gln Pro Ile Val Glu Gly Ala Thr Val Arg
                 85                  90                  95
Ile Asn Val Pro Ala Tyr Gly Arg Ile Pro Thr Arg Ser Asn Lys Gln
            100                 105                 110
Leu Lys Arg Lys Ser Glu Glu Ala Lys Val Ala Ile Arg Asn Ile Arg
        115                 120                 125
Arg Thr Phe Asn Asp Arg Leu Xaa Lys Asp Asp Asn Leu Thr Glu Asp
    130                 135                 140
Ala Val Lys Ser Leu Glu Lys Lys Ile Gln Glu Leu Thr Asp Lys Phe
145                 150                 155                 160
Cys Lys Gln Ile Glu Glu Leu Ala Lys Gln Lys Glu Ala Glu Leu Ala
                165                 170                 175
Thr Val

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<212>PRT
<213>Chlamydia trachomatis
<400>747
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Leu Ala Gln Arg Leu Glu His Leu Thr Phe Asn Glu Arg Val Glu Gly
             20                  25                  30
Ser Asn Pro Ser Arg Pro Ile Ser Phe Ser Lys Arg Ser Ser Leu Leu
         35                  40                  45
Ile Lys Lys Ile Ser Phe Leu Cys Phe Phe Leu Leu Leu Leu Lys Val
     50                  55                  60
Pro Arg Cys Ile Cys Thr Ala Phe Asp Met Asp His Thr Glu Glu Ser
 65                  70                  75                  80
Pro Ala Leu Cys Tyr Asn Cys Gln Gln Pro Ala Thr Ile Cys Phe Thr
                 85                  90                  95
Glu Ile Ser Glu Asn Ile Thr Ser Arg Cys Tyr Val Cys Asn Ser Cys
            100                 105                 110
Pro Tyr Pro Ser Arg Tyr Tyr Asp Arg Glu Thr Ile Leu Ala Ser Pro
        115                 120                 125
Thr His Glu Ala Leu Ile Leu Glu Cys Gly Asn Cys Lys Thr Lys Trp
    130                 135                 140
Cys Ile Arg Asp Thr Asp Glu Leu Leu Leu Gly Cys His Leu Cys Tyr
145                 150                 155                 160
Arg Thr Phe Lys Ser Leu Ile Leu Ser Arg Leu Leu Arg Tyr Gln Ala
                165                 170                 175
Ile Ser Ser Tyr Thr Ser Glu Lys Ala Asn Asn Phe His Ile Gly Arg
            180                 185                 190
Gly Leu Gly Asn Ser Glu Gln Pro Ile Ile Asn Pro Ala Met Arg Leu
        195                 200                 205
Ile Ala Leu His Glu Ala Leu Gln Glu Thr Leu Arg Arg Glu Asp Tyr
    210                 215                 220
Glu Gln Ala Ala Glu Ile Arg Asp Gln Ile Asn Gln Leu Lys Asn Gln
225                 230                 235                 240
Asn Thr Thr Asp Ala Pro
                245
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<210>748
<211>301
<212>PRT
<213>Chlamydia trachomatis
<400>748
Pro Asn Ser Phe Arg Leu Ser Lys Val Arg Lys Phe Phe Val Leu Pro
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Leu Lys Asp Leu Pro Ile Trp Gln Arg Glu Cys Leu Leu Glu His Tyr
20 25 30
Leu Phe Pro Tyr His Leu Gly Ser Cys Leu Glu Gly Glu Ala Leu Ile
35 40 45
Val Asn Gln Ala Gly Thr Leu Leu Ala Gly Ile Asn Leu Arg Asp His
50 55 60
Val Val Ile His Gly Val Asp Phe Val Trp Gln Pro Glu Val Leu Leu
65 70 75 80
Gln Lys Leu Ile Asp Leu Asp Ile Arg Leu Gln Gln Ser Leu Ser Phe
85 90 95
Ala Phe Ser Ser Asp Phe Gly Phe Leu Thr Ala Asp Pro Leu Arg Cys
100 105 110
Gly Thr Ala Leu Ile Ala Arg Ala Phe Val His Val Pro Ala Leu Lys
115 120 125
Tyr Gly Asp Ala Leu Ser Glu Leu Leu Val Pro Tyr Gln Arg Glu Phe
130 135 140
Ala Ser Ser Ser Leu Leu Pro Leu Ser Gln Glu Ser Leu Gly Asp Ile
145 150 155 160
Leu Cys Leu Ser Asn Ile Cys Ser Leu Gly Leu Ser Glu Glu Gln Ile
165 170 175
Leu Ser Ser Leu Arg Leu Val Val Ser Lys Ile Leu Ser Ala Glu Lys
180 185 190
Glu Ala Arg Asn Gln Leu Val Lys Glu Asn Xaa Thr Glu Xaa Lys Asn
195 200 205
Arg Ile Leu Arg Ser Val Gly Met Leu Thr His Ser Cys Cys Leu Asp
210 215 220
Leu Gln Glu Ala Leu Asp Ala Thr Ser Trp Ile Gln Leu Gly Met Ser
225 230 235 240
Met Gln Trp Ile Glu Asp Ser Glu Asn His Pro Leu Trp Asn Pro Leu
245 250 255
Phe Trp Asp Leu Arg Arg Gly His Leu Ala Leu Tyr Asn Gln Asp Thr
260 265 270
Ala Asn Arg Ser Ile Glu Lys Glu Val Ile Ala Gln Ile Arg Ala Lys
275 280 285
Ala Thr Lys Pro Gln Ala Glu Arg Leu Ile Ile Arg Ile
290 295 300
<210>749
<211>666
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<213>Chlamydia trachomatis
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Arg Val Arg Ile Leu Lys Lys Ser Asp Asn Thr Val Asn Phe Glu Asp
1 5 10 15
Ile Ser Ile Leu Glu Leu Leu Gln Phe Val Ser Lys Ile Ser Gly Thr
20 25 30
Asn Phe Val Phe Asp Ser Asn Asp Leu Gln Phe Asn Val Thr Ile Val
35 40 45
Ser His Asp Pro Thr Ser Val Asp Asp Leu Ala Thr Ile Leu Leu Gln
50 55 60
Val Leu Lys Met His Asp Leu Lys Val Val Glu Gln Gly Asn Asn Val
65 70 75 80
Leu Ile Tyr Arg Asn Pro Lys Leu Ser Lys Leu Ser Thr Val Val Thr
85 90 95
Asp Gly Ser Ala Lys Asp Thr Cys Glu Ala Val Val Val Thr Arg Val

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                100                 105                 110
Phe Arg Leu Tyr Ser Val Ser Pro Ser Ala Ala Val Gly Ile Ile Gln
        115                 120                 125
Pro Leu Leu Ser His Asp Ala Ile Ile Ser Ala Ser Glu Ser Thr Arg
    130                 135                 140
His Ile Ile Val Ser Asp Ile Ala Gly Asn Ile Glu Lys Val Arg Glu
145                 150                 155                 160
Leu Leu Gln Ala Leu Asp Ser Pro Gly Thr Ala Ile Asp Met Ser Glu
                165                 170                 175
Tyr Asp Val Gln Phe Ala Asn Pro Ala Ala Leu Val Ser Tyr Cys Gln
            180                 185                 190
Asp Val Leu Gly Ala Met Ala Glu Glu Glu Ala Phe Gln Ile Phe Ile
        195                 200                 205
Gln Pro Gly Thr Asn Lys Ile Phe Val Ile Ser Ser Pro Arg Leu Thr
    210                 215                 220
Ala Lys Thr Ile Gln Leu Leu Glu Ser Leu Asp Ile Pro Glu Met Ala
225                 230                 235                 240
His Thr Leu Asp Asp Val Thr Ser Pro Ala Ala Ala Leu Gly Ser Ser
                245                 250                 255
Gly Ala Ala Asn Pro Lys Ser Leu Arg Phe Phe Met Tyr Lys Leu Lys
            260                 265                 270
Tyr Gln Asn Gly Ala Ala Ile Ala Gln Ala Ile Gln Asp Ile Gly Tyr
        275                 280                 285
Asn Leu Tyr Val Thr Thr Ala Met Asp Glu Asp Phe Ile Asn Thr Leu
    290                 295                 300
Asn Ser Ile Gln Trp Leu Pro Val Asn Asn Ser Ile Val Val Ile Gly
305                 310                 315                 320
Asn Gln Ala Asn Val Asp Lys Val Val Ser Leu Leu Asn Gly Leu Asp
                325                 330                 335
Leu Pro Pro Lys Gln Val Tyr Ile Glu Val Leu Ile Leu Glu Thr Ser
            340                 345                 350
Leu Glu Lys Ser Trp Asp Phe Gly Val Gln Trp Ala Ala Leu Gly Asp
        355                 360                 365
Glu Gln Gly Lys Val Ala Tyr Ala Ser Gly Leu Leu Ser Asn Thr Gly
    370                 375                 380
Leu Thr Asp Pro Leu Arg Asn Gln Ser Leu Pro Val Ala Leu Asn Pro
385                 390                 395                 400
Gly Asn Ile Ser Leu Pro Thr Pro Gly Gln Leu Ala Gly Ile Ser Asp
                405                 410                 415
Met Met Tyr Gly Ser Ser Ala Phe Gly Leu Gly Ile Ile Gly Asn Val
            420                 425                 430
Leu Ser His Asn Gly Lys Ser Tyr Leu Thr Leu Gly Gly Leu Leu Ser
        435                 440                 445
Ala Leu Asp Gln Asp Gly Asp Thr Thr Val Val Leu Asn Pro Arg Ile
    450                 455                 460
Met Ala Gln Asp Thr Gln Gln Ala Ser Phe Phe Val Gly Gln Thr Ile
465                 470                 475                 480
Pro Phe Gln Thr Thr Ser Thr Val Ile Gln Glu Thr Gly Ser Val Thr
                485                 490                 495
Gln Asn Ile Glu Tyr Glu Asp Ile Gly Val Asn Leu Val Val Thr Ser
            500                 505                 510
Thr Ile Ala Pro Asn Asn Val Val Thr Leu Gln Ile Glu Gln Thr Ile
        515                 520                 525
Ser Glu Leu His Ser Ala Gln Gly Val Leu Thr Pro Val Thr Asp Lys
    530                 535                 540
Thr Phe Ala Ala Thr Arg Leu Gln Val Pro Asp Gly Cys Phe Leu Val
545                 550                 555                 560
Met Ser Gly His Ile Arg Asp Lys Leu Thr Lys Ile Val Ser Gly Val
                565                 570                 575
Pro Leu Leu Ser Ser Leu Pro Leu Ile Lys Gly Leu Phe Ser Arg Ser
            580                 585                 590
```

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```
Ile Asp Gln Arg Gln Lys Arg Asn Ile Met Ile Phe Ile Lys Pro Lys
        595                 600                 605
Val Ile Ser Ser Phe Glu Glu Gly Thr Ala Leu Ser Asn Thr Glu Gly
    610                 615                 620
Tyr Arg Tyr Asn Trp Glu Ser Glu Arg Gly Ser Leu Glu Val Ala Pro
625                 630                 635                 640
Arg His Ala Pro Glu Cys Gln His Ile Pro Lys Val Gln Ala Glu Ser
                645                 650                 655
Asn Phe Lys Met Leu Glu Ile Glu Ala Glu
            660                 665
<210>750
<211>275
<212>PRT
<213>Chlamydia trachomatis
<400>750
Gln Lys Ser Leu Ser Leu Asn Thr Tyr Gln Leu Lys Lys Ser Pro Val
  1               5                  10                  15
Asn Ile Val Thr Ser Asn Ile Gly Ser Lys Ile Leu Arg Ile Ile Gln
             20                  25                  30
Asn Asn Lys Lys Leu Gly Leu Leu Ser Ala Leu Val Val Leu Asp Ala
         35                  40                  45
Ala Leu Leu Ser Val Asn Ser Arg Ser Gly Glu Gly Leu Ile Gly Gln
     50                  55                  60
Ser Ala Ser Leu Pro Asn Tyr His Glu Ala Glu Gln Gln Ile Ala Ala
 65                  70                  75                  80
Cys Pro Lys Asn Ile Ala Lys Asn Leu Ala Lys Lys Ser Ser Pro Gly
                 85                  90                  95
Ala Lys Pro Thr Val Gly Ala Pro Ser Pro Ala Arg Pro Val Ser Val
            100                 105                 110
Lys Ala Ala Pro Ala Lys Pro Gln Ala Pro Val Ala Gln Thr Arg His
        115                 120                 125
Phe Lys Lys Ser His Gln Ile Phe Ser Pro Asn Phe Thr Gln Ser Ser
    130                 135                 140
Gln Gln Val Asn Lys Leu Glu Glu Arg Arg Arg Pro Leu Glu Ser Arg
145                 150                 155                 160
Tyr Leu Gln Gly Ala Ala Lys Gln Ala Ala Ala Ala Lys Glu Lys Lys
                165                 170                 175
Ala Leu Glu Gln Glu Val Ser Lys Gln Glu Glu Glu Ala Ser Lys Leu
            180                 185                 190
Trp Glu Glu Lys Gln Ser Tyr Ala Arg Arg Ala Val Asn Ala Ile Asn
        195                 200                 205
Phe Ser Val Arg Lys Gln Ile Glu Glu Gln Gln Lys Thr Ile Ser Asn
    210                 215                 220
Pro Gly Asn Asp Gln Thr Leu Pro Gly Lys Lys Asp Pro His Thr Ser
225                 230                 235                 240
Gly Glu Pro Val Ile Gln Thr Val Gln Asp Cys Ser Gln Asp Gln Glu
                245                 250                 255
Ala Arg Glu Lys Ser Ser Arg Ala Ile Lys Gln Thr Phe Ser Asp Val
            260                 265                 270
Ser Gly Ser
        275
<210>751
<211>185
<212>PRT
<213>Chlamydia trachomatis
<400>751
Tyr Ala Tyr Ile Trp Lys Arg Ser Arg Ile Leu Val Leu Tyr Ala Pro
  1               5                  10                  15
Gly Asn Cys Ser Phe Ala Leu Ser Met Met Lys Gln Phe Leu Asn Gln
             20                  25                  30
Arg Glu Glu Lys Ala Lys Asp Ile Gln Thr Val Ile Lys Ser Met Asp
```

```
          35                  40                  45
Thr Leu Cys Lys Thr Met His Ile Pro Ile Cys Lys Glu Gly Ile Ser
      50                  55                  60
Cys Cys Cys Phe Ile Phe Phe Leu Glu Glu Leu Met Cys Phe Ser Cys
 65                  70                  75                  80
Gly Lys Thr Asp Phe Ser Leu Lys Lys Gln Thr Gly Gly Val Gln Arg
                 85                  90                  95
Phe Gln Ala Glu Ser Gln Gly Ile Gly Glu Glu Thr Pro Leu Glu Ile
            100                 105                 110
His Glu Gln Ser Phe Leu Trp Glu Pro Gly Asp Glu Leu Ile Val His
        115                 120                 125
Thr Pro Lys Ala Arg Asp Leu Val Tyr Leu Tyr Cys Pro Ser Phe Leu
    130                 135                 140
Lys Leu Gln Asp Arg Gly Gln Ile Asp Ile Phe Cys Glu Thr Asp Asn
145                 150                 155                 160
Leu Gln Lys Gly Ile Arg Gln Lys Tyr Asp Arg Ser Leu Tyr Pro Ser
                165                 170                 175
Thr Leu Ile Ser Leu Lys Arg Val Arg
            180                 185
<210>752
<211>331
<212>PRT
<213>Chlamydia trachomatis
<400>752
Val Phe Met Leu Arg Ser Gly Val Ser Phe Ser Ser Ser Lys Thr Asn
  1                 5                  10                  15
Tyr Leu Leu Thr Arg Glu Leu Ser Arg Lys Val Gly Leu Thr Val Tyr
             20                  25                  30
Gln Gly Val Asp Glu His Ser Ser Arg Pro Val Val Ile Lys Thr Leu
         35                  40                  45
Val Ser Pro Gly Ile His Asp Arg Arg Phe Leu Arg Ala Phe Glu Glu
     50                  55                  60
Glu Ala Arg Ile Met Gln Leu Val Thr His Pro Ala Phe Val Arg Leu
 65                  70                  75                  80
Glu Asp Arg Gly Glu Cys Glu Gln Gly Arg Tyr Leu Val Ser Glu Tyr
                 85                  90                  95
Ile Leu Gly Ser Ser Leu Arg Asp Ser Ile Leu Ser Ser Gln Ile Ser
            100                 105                 110
Leu Asp Lys Ala Ile Ser Ile Val Leu Gln Val Ala Gln Val Ile Thr
        115                 120                 125
Thr Leu His Arg His Gly Val Leu His Leu Asp Ile Lys Pro Glu Asn
    130                 135                 140
Ile Val Leu Ser Gln Ser Gly Glu Ile Lys Leu Ile Asp Tyr Gly Leu
145                 150                 155                 160
Ser Ala Trp Gln Phe Asn His Trp Gly Ser Pro Ala Tyr Met Ser Pro
                165                 170                 175
Glu Gln Ser Arg Gln Glu Pro Pro Ser Pro Ala Ser Asp Val Tyr Ser
            180                 185                 190
Leu Ala Leu Leu Ala Tyr Glu Leu Ile Met Gly Gln Leu Ala Leu Gly
        195                 200                 205
Lys Val Tyr Val Ser Leu Leu Pro Ser Lys Ile Ser Lys Ile Leu Ile
    210                 215                 220
Gln Ala Leu Gln Pro Ser Pro Ala Ala Arg Phe Ser Ser Met Gln Glu
225                 230                 235                 240
Phe Ala Glu Ala Leu Gln Asp Tyr Leu Leu His Asp Val His Glu Asp
                245                 250                 255
Tyr Arg Lys Lys Asp His Val Val Ala Gln Ile Glu Gln Trp His Asn
            260                 265                 270
Gln Arg Ala Trp Leu Ser Pro Glu Lys Leu Ser Ala Pro Glu Glu Ile
        275                 280                 285
Cys Val His Ile Tyr Ser Gln Lys Glu Pro Cys Tyr Leu His Asn Ile
```

Sequence Listing

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    290                 295                 300
Tyr Tyr Asp Met Leu Thr Ser Gly Asn Val Ala Glu Phe Trp Phe Ser
305                 310                 315                 320
Thr Leu Gln Glu Thr Val Val Leu Arg Leu Ala
                325                 330
<210>753
<211>95
<212>PRT
<213>Chlamydia trachomatis
<400>753
Leu Lys Leu Gln Asp Cys Lys Arg Cys Asn Gln Lys Arg Arg Leu Lys
  1               5                  10                  15
Asn Leu Val Lys Glu Val Arg Gln Leu Pro Leu Pro Ser Ala Thr Lys
            20                  25                  30
Ile Val Ala Glu Val Ala Arg Tyr Ser Leu Ser Val Gly Glu Phe Leu
        35                  40                  45
Lys Leu Gly Pro Gly Ser Val Leu Gln Phe Asp Gly Val His Pro Thr
    50                  55                  60
Leu Gly Val Asp Ile Ile Leu Asn Gly Ala Gln Val Gly Arg Gly Asn
65                  70                  75                  80
Ile Ile Ala Leu Gln Asp Val Leu Gly Ile Arg Val Leu Glu Val
                85                  90                  95
<210>754
<211>125
<212>PRT
<213>Chlamydia trachomatis
<400>754
Asn Tyr Ser Ala Glu Pro Cys Arg Phe Leu Glu Glu Lys Asp Gln Ala
  1               5                  10                  15
Phe Asp Met Gln Lys Val Asp Leu Gln Thr Pro Ile Thr Leu Ala Val
            20                  25                  30
Glu Val Gly Phe Cys Gln Ile Ser Glu Glu Asp Trp His Gln Val Val
        35                  40                  45
Pro Gly Ser Phe Ile Leu Leu Asp Ala Cys Leu Tyr Asp Pro Asp Thr
    50                  55                  60
Gly Asp Ala Gly Ala Phe Leu Ser Ile Gln Arg Thr Arg Phe Phe Gly
65                  70                  75                  80
Gly Arg Phe Leu Asp Lys Gln Ser Gly Ser Phe Lys Ile Thr Gly Leu
                85                  90                  95
Gln Glu Met Gln Pro Glu Glu Ala Pro Glu Glu Pro Ser Glu Gly Gly
            100                 105                 110
Pro Ala Thr Pro Phe Ala Phe Gly Asn Lys Asn Arg Cys
        115                 120                 125
<210>755
<211>200
<212>PRT
<213>Chlamydia trachomatis
<400>755
Gly Ile Pro Met Ala Val Ala Ala Glu Pro Ser Ser Asn Trp Leu Lys
  1               5                  10                  15
Ala Arg Asp Glu Leu Leu Ser Ser Leu Gln Glu Gln Lys Glu Gly Met
            20                  25                  30
Phe Ser Phe Pro Val Phe Pro Lys Gln Glu Cys Glu Gln Lys Leu Lys
        35                  40                  45
Asp Lys Phe His Met Glu Glu Val Glu Leu Ser Phe Glu Ser Arg Gly
    50                  55                  60
Leu Leu Ser Val Ala Ala Ala Val Gln Glu Tyr Gly Glu Arg Ile Leu
65                  70                  75                  80
Leu Gln Pro Phe Leu Ala Asn Pro Phe Glu Ser Gly Glu Phe Tyr Ile
                85                  90                  95
Val Ser Ser Glu Glu Asp Leu Gln Ala Leu Ile Gly Thr Ile Phe Asn
```

```
            100                 105                 110
Asp Ser Ser Leu Ala Ser Tyr Phe Tyr Glu Lys Asp Arg Leu Leu Gly
        115                 120                 125
Phe His Tyr Tyr Phe Val Ala Glu Ile Cys Lys Leu Leu Gln Glu Ser
    130                 135                 140
Pro Trp Ile Pro Ser Met Ser Val Lys Val Thr Gly Asp Val Ala Phe
145                 150                 155                 160
Ser Ala Arg Ala Leu Glu Gly Glu Tyr His Val Ile Gln Val Ser Cys
                165                 170                 175
Cys Leu Asp Gly Ser Cys Ile Arg Phe Ser Ile Leu Val Pro Glu Thr
            180                 185                 190
Thr Ala Gln Ser Leu Val Asp Ser
        195                 200
<210>756
<211>284
<212>PRT
<213>Chlamydia trachomatis
<400>756
Phe Met Glu Leu Asn Lys Thr Ser Glu Ser Leu Phe Ser Ala Lys Ile
  1               5                  10                  15
Asp His Asn His Pro Arg Thr Glu Ala His Glu Pro Arg Asp Gln Arg
             20                  25                  30
Glu Val Arg Val Phe Ser Leu Glu Gly Arg Ser Ser Thr Arg Gln Glu
         35                  40                  45
Lys Ala Asp Arg Met Pro Gly Arg Thr Ser Ser Arg Gln Glu Ser Ser
     50                  55                  60
Lys Ser Ser Glu Glu Gly Ala Val His Glu Ser Thr Ala Gly Val Ser
 65                  70                  75                  80
Ser Lys Glu Glu Glu Glu Ser Lys Gly Asp Gly Phe Phe Thr Gly Gly
                 85                  90                  95
Asn Pro Thr Ser Gly Met Ala Leu Val Glu Thr Pro Met Ala Val Val
            100                 105                 110
Ser Glu Ala Met Met Glu Thr Ser Thr Met Thr Val Ser Gln Val Asp
        115                 120                 125
Leu Gln Trp Val Glu Gln Leu Val Thr Ser Thr Val Glu Ser Leu Leu
    130                 135                 140
Val Ala Asp Ile Asp Gly Lys Gln Leu Val Glu Ile Val Leu Asp Asn
145                 150                 155                 160
Ser Asn Thr Val Pro Ala Ala Phe Cys Gly Ala Asn Leu Thr Leu Val
                165                 170                 175
Gln Thr Gly Glu Glu Ile Ser Val Ser Phe Ser Asn Phe Val Asp Gln
            180                 185                 190
Ala Gln Leu Thr Glu Ala Thr Gln Leu Val Gln Gln Asn Pro Lys Gln
        195                 200                 205
Leu Val Ser Leu Val Glu Ser Leu Lys Ala Arg Gln Leu Asn Leu Thr
    210                 215                 220
Glu Leu Val Val Gly Asn Val Ala Val Ser Leu Pro Met Ile Glu Lys
225                 230                 235                 240
Ile Glu Thr Pro Leu His Met Ile Ala Ala Thr Ile Arg His His Asp
                245                 250                 255
Gln Glu Gly Asp Gln Glu Gly Glu Gly Arg Gln Asp Gln His Gln Gly
            260                 265                 270
Gln His Gln Glu Lys Lys Val Glu Glu Ala His Ile
        275                 280
<210>757
<211>119
<212>PRT
<213>Chlamydia trachomatis
<400>757
Glu Ser Leu Tyr Ala Glu Asn Ser Pro Leu Arg Glu Gln Leu Asp Asp
  1               5                  10                  15
```

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Gly Thr Thr Ser Asp Ala Ile Leu Lys Met Lys Ala Tyr Ile Lys Val
            20                  25                  30
Val Ala Ile Gln Leu Ser Glu Glu Glu Glu Lys Val Asn Lys Gln Lys
        35                  40                  45
Glu Asn Val Leu Ala Ala Xaa Lys Glu Leu Glu Arg Ala Glu Val Glu
    50                  55                  60
Leu Thr Lys Arg Arg Lys Glu Glu Glu Lys Thr Arg Leu His Lys Glu
65                  70                  75                  80
Glu Trp Met Lys Glu Ala Leu Lys Glu Glu Ala Arg Gln Glu Glu Lys
                85                  90                  95
Glu Gln Asp Glu Met Gly Gln Leu Leu His Gln Leu Leu Lys Gln Lys
            100                 105                 110
Gln Arg Glu Ser Gly Glu Asn
        115
<210>758
<211>442
<212>PRT
<213>Chlamydia trachomatis
<400>758
Met Glu Glu Ile Thr Thr Glu Phe Asn Thr Leu Met Thr Glu Leu Pro
  1             5                  10                  15
Asp Val Gln Leu Thr Ala Val Val Gly Arg Ile Ile Glu Val Val Gly
            20                  25                  30
Met Leu Ile Lys Ala Val Val Pro Asp Val Arg Val Gly Glu Val Cys
        35                  40                  45
Leu Val Lys Arg His Gly Met Glu Pro Leu Val Thr Glu Val Val Gly
    50                  55                  60
Phe Thr Gln Asn Phe Val Phe Leu Ser Pro Leu Gly Glu Leu Thr Gly
65                  70                  75                  80
Val Ser Pro Ser Ser Glu Val Met Ala Thr Gly Leu Pro Leu His Ile
                85                  90                  95
Arg Ala Gly Glu Gly Leu Leu Gly Arg Val Leu Asn Gly Leu Gly Asn
            100                 105                 110
Pro Ile Asp Thr Glu Thr Lys Gly Pro Leu Glu Asn Val Asp Ala Ile
        115                 120                 125
Tyr Pro Ile Phe Lys Ala Pro Pro Asp Pro Leu His Arg Ala Lys Leu
    130                 135                 140
Arg Thr Ile Leu Ser Thr Gly Val Arg Cys Ile Asp Gly Met Leu Thr
145                 150                 155                 160
Val Ala Lys Gly Gln Arg Ile Gly Ile Xaa Ala Gly Ala Gly Val Gly
                165                 170                 175
Lys Ser Ser Leu Leu Gly Met Ile Ala Arg Asn Ala Glu Glu Ala Asp
            180                 185                 190
Ile Asn Val Ile Ala Leu Ile Gly Glu Arg Gly Arg Glu Val Arg Glu
        195                 200                 205
Phe Ile Glu Asn Asp Leu Gly Glu Glu Gly Met Lys Arg Ser Ile Ile
    210                 215                 220
Val Val Ser Thr Ser Asp Gln Ser Ser Gln Leu Arg Leu Asn Ala Ala
225                 230                 235                 240
Tyr Val Gly Thr Ala Ile Ala Glu Tyr Phe Arg Asp Gln Gly Lys Thr
                245                 250                 255
Val Val Leu Met Met Asp Ser Val Thr Arg Phe Ala Arg Ala Leu Arg
            260                 265                 270
Glu Val Gly Leu Ala Ala Gly Glu Pro Pro Ala Arg Ala Gly Tyr Thr
        275                 280                 285
Pro Ser Val Phe Ser Thr Leu Pro Lys Leu Leu Glu Arg Ala Gly Ala
    290                 295                 300
Ser Asp Lys Gly Thr Ile Thr Ala Phe Tyr Thr Val Leu Val Ala Gly
305                 310                 315                 320
Asp Asp Met Asn Glu Pro Val Ala Asp Glu Val Lys Ser Ile Leu Asp
                325                 330                 335
```

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```
Gly His Ile Val Leu Ser Asn Ala Leu Ala Gln Ala Tyr His Tyr Pro
            340                 345                 350
Ala Ile Asp Val Leu Ala Ser Ile Ser Arg Leu Leu Thr Ala Ile Val
        355                 360                 365
Pro Glu Glu Gln Arg Arg Ile Ile Gly Arg Ala Arg Glu Val Leu Ala
    370                 375                 380
Lys Tyr Lys Ala Asn Glu Met Leu Ile Arg Ile Gly Glu Tyr Arg Arg
385                 390                 395                 400
Gly Ser Asp Arg Glu Val Asp Phe Ala Ile Asp His Ile Asp Lys Leu
                405                 410                 415
Asn Arg Phe Leu Lys Gln Asp Ile His Glu Lys Thr Asn Tyr Glu Glu
            420                 425                 430
Ala Ala Gln Gln Leu Arg Ala Ile Phe Arg
        435                 440
<210>759
<211>231
<212>PRT
<213>Chlamydia trachomatis
<400>759
Ile Arg Glu Arg Val Gly Tyr Ser Met Ile Asp Pro Leu Lys Leu Phe
  1               5                  10                  15
Pro Asn Phe Asp Gly Asp Lys Glu Ser Ala Ala Val Asn Lys Pro Ser
             20                  25                  30
Ala Ser Pro Met Pro Ser Glu Leu Ser Lys Asn Val Ala Ser Phe Ser
         35                  40                  45
Leu Gly Gly Gly Gly Ala Ala Leu Asp Ser Thr Val Ser Thr Glu Lys
     50                  55                  60
Leu Ser Leu Met Ala Met Met Gln Asp Lys Asn Ser Gln Leu Ile Asp
 65                  70                  75                  80
Pro Glu Leu Glu Glu Ala Leu Asn Ser Glu Glu Leu Gln Glu Gln Ile
                85                  90                  95
His Leu Leu Lys Ser Arg Leu Trp Asp Ala Gln Thr Gln Met Gln Met
            100                 105                 110
Gln Asp Pro Asp Lys Leu Ala Ser Glu His Val Asp Ala Leu Gly Val
        115                 120                 125
Ile Val Asp Leu Ile Asn Gly Asp Phe Gln Ala Ile Ala Glu His Thr
    130                 135                 140
Gln Gln Thr Val Lys Gln Gly Asn Gly Asp Glu Glu Lys Ser Val Thr
145                 150                 155                 160
Arg Lys Ile Val Asp Trp Val Ser Ser Gly Glu Glu Ile Leu Asn Arg
                165                 170                 175
Ala Leu Leu Tyr Phe Ser Asp Arg Asn Gly Glu Arg Glu Thr Leu Ala
            180                 185                 190
Asp Phe Leu Lys Val Gln Tyr Ala Val Gln Arg Ala Thr Gln Arg Ala
        195                 200                 205
Glu Leu Phe Ala Ser Ile Leu Gly Ala Thr Val Ser Ser Val Lys Thr
    210                 215                 220
Ile Met Thr Thr Gln Leu Gly
225                 230
<210>760
<211>154
<212>PRT
<213>Chlamydia trachomatis
<400>760
Asn Lys Arg Trp Val Met Ala Asp Leu Asp Val Phe Lys Glu Asp Phe
  1               5                  10                  15
Ala Leu Leu Phe Glu Ala Gly Met Val Ala Ile Lys Gln Gly Asp Glu
             20                  25                  30
Ala Ser Ala Lys Ala Leu Phe Gln Ala Leu Gln Val Leu Asp Pro Glu
         35                  40                  45
His Thr Ala His Glu Leu Gly Ser Gly Leu Leu His Leu His Lys Met
```

Substitute Sheet (Rule 26)

```
     50                  55                  60
Glu Leu Thr Lys Ala Glu Val Leu Phe Arg Ala Ile Val Glu Lys Asp
 65                  70                  75                  80
Pro Glu Asn Trp Ser Ala Lys Ala Phe Leu Ser Leu Thr Leu Met Met
                85                  90                  95
Ile Val Leu Gln Gln Gly Ser Ser Phe Glu Val Arg Arg Ser Ser Leu
            100                 105                 110
Glu Arg Cys Leu Gln Leu Ala Asp Gln Val Leu Glu Ser Cys Glu Val
        115                 120                 125
Glu Ser Thr Arg Ala Leu Ala Lys Ser Val Leu Asp Trp His Asp Gly
    130                 135                 140
Leu Val Ala Lys Ser Gly Gly Pro Leu Asn
145                 150
<210>761
<211>90
<212>PRT
<213>Chlamydia trachomatis
<400>761
Thr Val Lys Glu Arg Val Ser Met Ala Ser Gly Ser Cys Ser Ala Phe
  1               5                  10                  15
Asn Phe Asn Gln Met Leu Asp Gly Val Cys Lys Tyr Val Gln Gly Val
             20                  25                  30
Gln Gln Tyr Leu Thr Glu Leu Glu Thr Ser Thr Gln Gly Thr Val Asp
         35                  40                  45
Leu Gly Thr Met Phe Asn Leu Gln Phe Arg Met Gln Ile Leu Ser Gln
     50                  55                  60
Tyr Met Glu Ser Val Ser Asn Ile Leu Thr Ala Val Asn Thr Glu Met
 65                  70                  75                  80
Ile Thr Met Ala Arg Ala Val Lys Gly Ser
                85                  90
<210>762
<211>103
<212>PRT
<213>Chlamydia trachomatis
<400>762
Asn Ile Lys Leu Ser Thr Ile Asn Arg Gln Phe Glu Val Tyr Leu Ile
  1               5                  10                  15
Leu Pro Gly Arg Asn Lys Ser Met Phe Asn Met Glu Asn Ser Ala Ala
             20                  25                  30
Lys Gly Glu Lys Ala Ala Arg Gln Leu Phe Asp Leu Glu Gln Asp Met
         35                  40                  45
His Asp Val Ala Lys Ala His Glu Val Asn Ala Asn Val Gln Ser Lys
     50                  55                  60
Val Gln Thr Leu Thr Ser Ser Leu Arg Glu Gly Ala Phe Lys Glu Ser
 65                  70                  75                  80
Phe Glu Lys Gln Gln Thr Leu Leu Ala Gly Ile Cys Ser Ser Ser Lys
                85                  90                  95
Gly Ala Arg Thr Tyr Gln Pro
            100
<210>763
<211>767
<212>PRT
<213>Chlamydia trachomatis
<400>763
Met Leu Pro Arg Pro Val Ser Val Asp Gly Thr Val Ile Thr Ala Pro
  1               5                  10                  15
Val Leu Leu Lys Asp Gly Val Ser Phe Val Met Gly Ser Cys Gln Val
             20                  25                  30
Ser Phe Phe Lys Gly Glu Glu Val Glu Gly Asp Ile Glu Leu Ser Phe
         35                  40                  45
Gln Thr Glu Gly Gly Asn Glu Gly Glu Pro Ala Ala Gln Gly Ser Ser
```

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```
     50                  55                  60
Ser Val Ser Ser Glu Gly Pro Lys Lys Glu Thr Gly Asn Pro Ser Leu
 65                  70                  75                  80
Pro Ser Glu Thr Lys Val Ser Gly Glu Val Ser Ser Ser Ala Ile Ala
                 85                  90                  95
Lys Glu Gln Glu Leu Ala Val Phe Phe Leu Ala Ser Val Glu Lys Glu
            100                 105                 110
Pro Gly Thr Pro Lys Glu Val Ser Glu Pro Lys Val Ser Ser Gln Glu
        115                 120                 125
Gly Gln Thr Pro Ser Val Thr Gly Glu Lys Lys Asp Leu Glu Leu Pro
    130                 135                 140
Leu Ala Ser Gln Glu Gln Pro Lys Gln Thr Thr Pro Ser Gly Ser Gly
145                 150                 155                 160
Glu Pro Thr Gln Ser Gln Asn Ala Ser Met Glu Glu Asn Arg Thr Ser
                165                 170                 175
Pro Asp Gln Asn Gln Gln Pro Gln Leu Ser Ser Ala Ser Glu Ser Gly
            180                 185                 190
Ser Gln Ser Pro Glu Asn Gln Glu Gln Gln Pro Ser Gln Thr Pro Pro
        195                 200                 205
Pro Ser Pro Glu Thr Pro Glu Pro Ser Gly Glu Pro Asn Ser Ala Thr
    210                 215                 220
Glu Glu Asn Ser Pro Ser Pro Met Glu Lys Ala Ser Val Thr Glu Glu
225                 230                 235                 240
Gly Ser Ser Gly Thr Ser Glu Glu Glu Lys Glu Gly Glu Glu Asp Thr
                245                 250                 255
Ala Glu Ser Ala Ala Asn Glu Glu Leu Lys Ala Glu Ala Ser Gln Glu
            260                 265                 270
Glu Glu Lys Lys Glu Glu Asp Lys Xaa Glu Val Leu Ala Pro Phe Asn
        275                 280                 285
Val Gln Asp Leu Phe Arg Phe Asp Gln Gly Ile Phe Pro Ala Glu Ile
    290                 295                 300
Glu Asp Leu Ala Gln Lys Gln Val Ala Val Asp Leu Thr Gln Pro Ser
305                 310                 315                 320
Arg Phe Leu Leu Lys Val Leu Ala Gly Ala Asn Ile Gly Ala Glu Phe
                325                 330                 335
His Leu Asp Ser Gly Lys Thr Tyr Ile Val Gly Ser Asp Pro Gln Val
            340                 345                 350
Ala Asp Ile Val Leu Ser Asp Met Ser Ile Ser Arg Gln His Ala Lys
        355                 360                 365
Ile Ile Ile Gly Asn Asp Asn Ser Val Leu Ile Glu Asp Leu Gly Ser
    370                 375                 380
Lys Asn Gly Val Ile Val Glu Gly Arg Lys Ile Glu His Gln Ser Thr
385                 390                 395                 400
Leu Ser Ala Asn Gln Val Val Ala Leu Gly Thr Thr Leu Phe Leu Leu
                405                 410                 415
Val Asp Tyr Thr Ala Pro Ser Asp Thr Val Met Ala Thr Ile Ser Ser
            420                 425                 430
Glu Asp Tyr Gly Leu Phe Gly Arg Pro Gln Ser Pro Glu Glu Ile Ala
        435                 440                 445
Ala Arg Ala Ala Glu Glu Glu Glu Glu Lys Arg Lys Arg Ala Thr Leu
    450                 455                 460
Pro Thr Gly Ala Phe Ile Leu Thr Leu Phe Ile Gly Gly Leu Ala Leu
465                 470                 475                 480
Leu Phe Gly Ile Gly Thr Thr Ser Leu Phe His Thr Lys Glu Val Val
                485                 490                 495
Ser Ile Asp Gln Ile Asp Leu Ile His Asp Ile Glu His Val Ile Gln
            500                 505                 510
Gln Phe Pro Thr Val Arg Phe Thr Phe Asn Lys Asn Asn Gly Gln Leu
        515                 520                 525
Phe Leu Ile Gly His Val Arg Asn Ser Ile Asp Lys Ser Glu Leu Leu
    530                 535                 540
```

Tyr Lys Val Asp Ala Leu Ser Phe Val Lys Ser Val Asp Asp Asn Val
545 550 555 560
Ile Asp Asp Glu Ala Val Trp Gln Glu Met Asn Ile Leu Leu Ser Lys
565 570 575
Asn Pro Glu Phe Lys Gly Ile Ser Met Gln Ser Pro Glu Pro Gly Ile
580 585 590
Phe Val Ile Ser Gly Tyr Leu Lys Thr Glu Glu Gln Ala Ala Cys Leu
595 600 605
Ala Asp Tyr Leu Asn Leu His Phe Asn Tyr Leu Ser Leu Leu Asp Asn
610 615 620
Lys Val Ile Ile Glu Ser Gln Val Met Lys Ala Leu Ala Gly His Leu
625 630 635 640
Val Gln Ser Gly Phe Ala Asn Val His Val Ser Phe Thr Asn Gly Glu
645 650 655
Ala Val Leu Thr Gly Tyr Ile Asn Asn Lys Asp Ala Asp Lys Phe Arg
660 665 670
Thr Val Val Gln Glu Leu Gln Asp Ile Ala Gly Ile Arg Ala Val Lys
675 680 685
Asn Phe Val Val Leu Leu Xaa Ala Glu Glu Gly Val Ile Asp Leu Asn
690 695 700
Met Arg Tyr Pro Gly Arg Tyr Arg Val Thr Gly Phe Ser Lys Cys Gly
705 710 715 720
Asp Ile Ser Ile Asn Val Val Val Asn Gly Arg Ile Leu Thr Arg Gly
725 730 735
Asp Ile Leu Asp Gly Met Thr Val Thr Ser Ile Gln Pro His Cys Ile
740 745 750
Phe Leu Glu Arg Glu Gly Leu Lys Tyr Lys Ile Glu Tyr Asn Lys
755 760 765

<210>764
<211>137
<212>PRT
<213>Chlamydia trachomatis
<400>764
Ala Arg Glu His Met Leu Glu Lys Leu Ile Lys Asn Phe Val Ala Tyr
1 5 10 15
Met Gly Val Ala Ser Glu Leu Glu Phe Asp Ala Asp Gly Ser Tyr Val
20 25 30
Leu Pro Ile Ser Ser Leu Val Arg Met Arg Val Arg Gln Asn Ala Asp
35 40 45
Glu Glu Ile Ile Ile Ser Ala Phe Leu Gly Glu Ile Pro Ala Phe Met
50 55 60
Asp Ile Glu Lys Ala Tyr Ala Arg Met Met Glu Gly Asn Leu Phe Gly
65 70 75 80
Gln Glu Thr Gly Gly Ala Ala Leu Gly Leu Asp Ser Asp Gly His Ala
85 90 95
Val Leu Val Arg Arg Val Pro Gly Glu Val Ser Gln Glu Asp Phe Ala
100 105 110
Ser Phe Ile Gly Gly Val Leu Asn Tyr Ala Glu Ala Trp Leu Glu Asp
115 120 125
Leu Gly Leu Ser Lys Thr Glu Gln Xaa
130 135

<210>765
<211>348
<212>PRT
<213>Chlamydia trachomatis
<400>765
Met Met Arg Gly Ser Leu Arg Ser Lys Glu Glu Thr Val Met Val Arg
1 5 10 15
Glu Gly Glu Glu Arg Ile Gly Asn Arg Val Leu Leu Gly Val Ile Gly
20 25 30
Val Ser Tyr Arg Glu Thr Thr Leu Gln Gln Arg Glu Gln Val Leu His

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          35                  40                  45
Ile Leu Gln Gln Ala Gln Gly Ser Phe Arg Pro Glu Val Phe Gln Glu
     50                  55                  60
Glu Arg Asp Tyr Val Leu Leu Ala Thr Cys His Arg Val Glu Leu Tyr
 65                  70                  75                  80
Ser Val Ala Pro Ala Glu Leu Phe Asp Ser Leu Ala Gln Glu Ile Lys
                85                  90                  95
Leu Leu Gly Val Ser Pro Tyr Phe Tyr Arg Asn Gln Asp Cys Phe Ala
            100                 105                 110
His Leu Phe Cys Val Ala Gly Gly Leu Asp Ser Leu Val Leu Gly Glu
        115                 120                 125
Thr Glu Ile Gln Gly Gln Val Lys Arg Ala Tyr Leu Gln Ala Ala Arg
    130                 135                 140
Glu Gln Lys Leu Ser Phe Ala Leu His Phe Leu Phe Gln Lys Ala Leu
145                 150                 155                 160
Lys Glu Gly Lys Val Phe Arg Ala Lys Gly Gly Ala Pro Tyr Ala Ala
                165                 170                 175
Ile Thr Ile Pro Ile Leu Val Asp Gln Glu Leu Arg Arg Arg Gln Ile
            180                 185                 190
Asp Lys Lys Ala Ser Leu Leu Phe Ile Gly Tyr Ser Glu Ile Asn Arg
        195                 200                 205
Ser Val Ala Tyr His Leu Arg Arg Gln Gly Phe Ser Cys Ile Thr Phe
    210                 215                 220
Cys Ser Arg Gln Gln Leu Pro Thr Leu Ser Met Arg Gln Val Val Arg
225                 230                 235                 240
Glu Glu Leu Cys Phe Gln Asp Pro Tyr Arg Val Val Phe Leu Gly Ser
                245                 250                 255
Leu Glu Leu Gln Tyr Ala Leu Pro His Ser Leu Trp Glu Ser Ile Trp
            260                 265                 270
Asp Ile Pro Asp Arg Ile Val Phe Asp Phe Ala Val Pro Arg Ala Leu
        275                 280                 285
Pro Ser His Thr Val Phe Pro His Arg Tyr Met Asp Met Asp Gln Ile
    290                 295                 300
Ser Asp Trp Leu Arg Glu His Arg Lys Glu Val Asn Ser Ala His Leu
305                 310                 315                 320
Asp Ser Leu Arg Glu Val Ala Tyr Arg Tyr Trp Asn Ser Leu Asn Gln
                325                 330                 335
Arg Leu Glu Arg His Asp Cys Val Gly Ala Asn Ala
            340                 345
<210>766
<211>605
<212>PRT
<213>Chlamydia trachomatis
<400>766
Met Arg Lys Lys Thr Ala Tyr Ser Glu Ser Ser Ile Ile Ser Leu Ala
  1                 5                  10                  15
Ser Leu Asp His Ile Arg Leu Arg Ala Gly Met Tyr Ile Gly Arg Leu
             20                  25                  30
Gly Asp Gly Ser Gln Ala Glu Asp Gly Ile Tyr Thr Leu Phe Lys Glu
         35                  40                  45
Val Val Asp Asn Ala Ile Asp Glu Phe Val Met Gly Tyr Gly His Thr
     50                  55                  60
Ile His Ile Thr Gly Asp Ala His Glu Leu Ser Ile Arg Asp Glu Gly
 65                  70                  75                  80
Arg Gly Ile Pro Leu Gly Lys Val Ile Asp Cys Val Ser Lys Ile Asn
                85                  90                  95
Thr Gly Ala Lys Tyr Thr Gln Asp Val Phe His Phe Ser Val Gly Leu
            100                 105                 110
Asn Gly Val Gly Leu Lys Ala Val Asn Ala Leu Ser Gln His Phe Ser
        115                 120                 125
Val Arg Ser Val Arg Asn Lys Lys Phe Leu Lys Ala Ser Phe Ser Lys
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    130                 135                 140
Gly Ile Leu Leu His Thr Glu Gln Gly Ala Thr Gln Asp Pro Asp Gly
145                 150                 155                 160
Thr Glu Val Val Phe Ser Pro Asp His Glu Leu Phe Glu Asn Phe Ser
                165                 170                 175
Phe Gln Val Glu Phe Leu Lys Lys Lys Ile Arg Gln Tyr Thr Tyr Leu
            180                 185                 190
His Pro Gly Leu Thr Ile Ile Tyr Asn Gly Glu Arg Ile Val Ser Thr
        195                 200                 205
Arg Gly Leu Leu Asp Leu Phe Glu Glu Glu Val Gln Thr Pro Leu Leu
    210                 215                 220
Tyr Ser Pro Ile Thr Phe Gln Tyr Ser Asp Leu Ala Phe Leu Phe Ser
225                 230                 235                 240
His Thr Glu Thr Ser Ser Glu Gln Tyr Phe Ser Phe Val Asn Gly Gln
                245                 250                 255
Glu Thr Thr Asp Gly Gly Thr His Leu Val Ala Phe Lys Glu Gly Ile
            260                 265                 270
Val Lys Gly Val Asn Glu Phe Phe Gly Lys Asn Phe Ser Ser Gln Asp
        275                 280                 285
Ile Arg Glu Gly Leu Ala Gly Cys Ile Ala Ile Lys Ile Ala Ser Pro
    290                 295                 300
Ile Phe Glu Ser Gln Thr Lys Asn Lys Leu Gly Asn Thr Asn Ile Arg
305                 310                 315                 320
Ala Glu Leu Ala Lys Arg Val Lys Glu Ala Val Leu Ser Ser Leu Lys
                325                 330                 335
Lys Asn Pro Ser Ser Ala Glu Arg Ile Gln Glu Lys Ile Lys Leu Asn
            340                 345                 350
Glu Lys Thr Arg Lys Asn Ala Gln Phe Leu Lys Gln Glu Leu Lys Asp
        355                 360                 365
Lys Gln Lys Lys Leu His Tyr Lys Ile Pro Lys Leu Arg Asp Cys Lys
    370                 375                 380
Phe His Leu Thr Asp Asn Ser Leu Tyr Gly Lys Asn Ser Ser Ile Phe
385                 390                 395                 400
Ile Thr Glu Gly Glu Ser Ala Ser Ala Ser Ile Leu Ala Ser Arg Asn
                405                 410                 415
Pro Leu Thr Gln Ala Val Phe Ser Leu Arg Gly Lys Pro Met Asn Val
            420                 425                 430
Phe Ser Ser Lys Glu Glu Thr Ile Tyr Lys Asn Asp Glu Leu Phe Tyr
        435                 440                 445
Leu Ala Thr Ala Leu Gly Leu His Lys Asp Ser Leu Gln Asn Leu Arg
    450                 455                 460
Tyr Asn Gln Val Ile Leu Ala Thr Asp Ala Asp Val Asp Gly Met His
465                 470                 475                 480
Ile Arg Asn Leu Met Ile Thr Phe Phe Leu Lys Thr Phe Leu Pro Leu
                485                 490                 495
Val Ala Ser Asn His Leu Phe Ile Leu Glu Thr Pro Leu Phe Lys Val
            500                 505                 510
Arg His Lys Asp Ala Thr Phe Tyr Cys Tyr Ser Glu Glu Glu Lys Leu
        515                 520                 525
Ser Thr Ile Glu His Ile Gly Lys Lys Glu Ser Ser Leu Glu Ile Thr
    530                 535                 540
Arg Phe Lys Gly Leu Gly Glu Ile Ser Pro Lys Glu Phe Lys Ser Phe
545                 550                 555                 560
Ile Gly Ala Asp Met Arg Leu Thr Pro Val Ser Leu Pro Asp Thr Glu
                565                 570                 575
Thr Leu Asp Thr Leu Leu Gln Phe Tyr Met Gly Lys Asn Thr Lys Glu
            580                 585                 590
Arg Lys Leu Phe Ile Ile Glu Asn Leu Val Thr Asn Leu
        595                 600                 605
<210>767
<211>502
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<212>PRT
<213>Chlamydia trachomatis
<400>767

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Glu Ser Cys Tyr Gln Pro Leu Ala Ile Asn Glu Leu Met Ser Asp Leu
 1               5                  10                  15
Ser Asp Leu Phe Lys Thr His Phe Thr Gln Tyr Ala Ser Tyr Val Ile
            20                  25                  30
Leu Glu Arg Ala Ile Pro His Val Leu Asp Gly Leu Lys Pro Val Gln
        35                  40                  45
Arg Arg Leu Leu Trp Thr Leu Phe Arg Met Asp Asp Gly Lys Met His
    50                  55                  60
Lys Val Ala Asn Ile Ala Gly Arg Thr Met Ala Leu His Pro His Gly
65                  70                  75                  80
Asp Ala Pro Ile Val Glu Ala Leu Val Val Leu Ala Asn Lys Gly Phe
                85                  90                  95
Leu Ile Glu Thr Gln Gly Asn Phe Gly Asn Pro Leu Thr Gly Asp Pro
            100                 105                 110
His Ala Ala Ala Arg Tyr Ile Glu Ala Arg Leu Ser Pro Leu Ala Lys
        115                 120                 125
Glu Val Leu Phe Asn Thr Asp Leu Met Thr Phe His Asp Ser Tyr Asp
    130                 135                 140
Gly Arg Glu Gln Glu Pro Asp Ile Leu Ala Ala Lys Ile Pro Leu Leu
145                 150                 155                 160
Leu Leu His Gly Val Asp Gly Ile Ala Val Gly Met Thr Thr Lys Ile
                165                 170                 175
Phe Pro His Asn Phe Cys Asp Leu Leu Glu Ala Gln Ile Ala Ile Leu
            180                 185                 190
Asn Asp Gln Pro Phe Ser Leu Leu Pro Asp Phe Pro Ser Gly Gly Thr
        195                 200                 205
Met Asp Ala Ser Asp Tyr Gln Asp Gly Leu Gly Ser Ile Val Leu Arg
    210                 215                 220
Ala Thr Ile Asp Ile Ile Asn Asp Lys Thr Leu Leu Ile Lys Glu Ile
225                 230                 235                 240
Cys Pro Ser Thr Thr Thr Glu Thr Leu Ile Arg Ser Ile Glu Asn Ala
                245                 250                 255
Ala Lys Arg Gly Ile Ile Lys Ile Asp Ser Ile Gln Asp Phe Ser Thr
            260                 265                 270
Asp Leu Pro His Ile Glu Ile Lys Leu Pro Lys Gly Ile His Ala Lys
        275                 280                 285
Asp Leu Leu Arg Pro Leu Tyr Thr His Thr Glu Cys Gln Val Ile Leu
    290                 295                 300
Thr Ser Arg Pro Thr Ala Ile Tyr Gln Gly Lys Pro Trp Glu Thr Thr
305                 310                 315                 320
Ile Ser Glu Ile Leu Arg Leu Gln Thr Glu Thr Leu Gln Asn Tyr Leu
                325                 330                 335
Lys Lys Glu Leu Leu Ile Leu Glu Asp Ser Leu Ser Arg Glu Leu Tyr
            340                 345                 350
His Lys Thr Leu Glu Tyr Leu Phe Ile Lys His Lys Leu Tyr Asp Thr
        355                 360                 365
Val Arg Ser Met Leu Ser Lys Arg Lys Thr Ser Pro Ser Ser Ser Ala
    370                 375                 380
Ile His Asn Ala Val Leu Glu Ala Leu Thr Pro Phe Leu Asp Thr Leu
385                 390                 395                 400
Pro Ala Pro Asp Lys Gln Ala Thr Ala Gln Leu Ala Ala Leu Thr Ile
                405                 410                 415
Lys Lys Ile Leu Cys Phe Asp Glu Asn Ser Tyr Glu Lys Glu Leu Ala
            420                 425                 430
Cys Leu Glu Lys Lys Arg Ser Ser Val Gln Lys Asp Leu Ser Gln Leu
        435                 440                 445
Lys Lys Tyr Thr Val Leu Tyr Ile Lys Lys Leu Leu Glu Thr Tyr Arg
    450                 455                 460
```

Gln Leu Gly His Arg Lys Thr Lys Ile Ala Lys Phe Asp Asp Leu Pro
465 470 475 480
Thr Glu Arg Val Ser Ala His Lys Lys Ala Lys Glu Pro Ala Ala Leu
485 490 495
Asp Gln Glu Glu Asn Phe
500

<210>768
<211>82
<212>PRT
<213>Chlamydia trachomatis
<400>768
Asp Leu Leu Arg Met Lys Glu Phe Leu Ala Tyr Ile Val Lys Asn Leu
1 5 10 15
Val Asp Lys Pro Glu Glu Val His Leu Lys Glu Val Gln Gly Thr Asn
20 25 30
Thr Ile Ile Tyr Glu Leu Thr Val Ala Lys Gly Asp Ile Gly Lys Ile
35 40 45
Ile Gly Lys Glu Gly Arg Thr Ile Lys Ala Ile Arg Thr Leu Leu Val
50 55 60
Ser Val Ala Ser Arg Asp Asn Val Lys Val Ser Leu Glu Ile Met Glu
65 70 75 80
Glu Arg

<210>769
<211>150
<212>PRT
<213>Chlamydia trachomatis
<400>769
Leu Ile Leu Glu Ile Pro Ala Pro Thr Ala Val Phe Ser Phe Val Ile
1 5 10 15
Asp Glu Gln Leu Thr Gly Arg Leu Asp Lys Gly Leu Val Ser Tyr Asn
20 25 30
Gly Ala Tyr Ser Arg Ala Phe Tyr Gln Gln Gln Ile Glu Leu Gly Arg
35 40 45
Val Arg Val Asn Gly Arg Val Tyr Thr Arg Val Ser His Pro Leu Ser
50 55 60
Leu Gly Asp Val Val Glu Val Glu Leu Ile Glu Glu Glu Glu Pro Ser
65 70 75 80
Ser Leu Ile Pro Glu Asp Ile Pro Leu Asp Lys Val Tyr Glu Asp Asp
85 90 95
Met Ile Leu Val Ile Asn Lys Pro Arg Asp Met Val Val His Pro Ala
100 105 110
Pro Gly His Thr Gln Gly Thr Val Val His Ala Leu Leu His Glu Ile
115 120 125
Gly Glu Arg Leu Lys Gln Glu Leu Pro Arg Gly Ala Met Ala Pro Arg
130 135 140
Asp Cys Thr Ser Leu Arg
145 150

<210>770
<211>124
<212>PRT
<213>Chlamydia trachomatis
<400>770
Arg Asn Gly Ser Ser Thr Thr Arg Phe Lys Glu Asn Ala Phe Gly Ile
1 5 10 15
Gln Arg Leu Met Glu Ile Arg Tyr Phe Leu Ala Arg Pro Leu Leu Glu
20 25 30
Glu Glu Val Cys Arg Leu Ala Asn Asn Arg Lys Asn Phe Leu Phe Asp
35 40 45
Ala Glu Lys Tyr Leu Ile Pro Ile Cys Tyr Lys Gln Thr Ile Tyr Leu
50 55 60

Sequence Listing

Ala Lys Pro Leu Ser Arg Phe Pro Met Thr Gln Glu Val Trp Glu Leu
65 70 75 80
His Val Gln His Val Ile Ser Leu Leu Lys Gln Gln Phe Gly Ile Leu
85 90 95
Thr Asp His Ala Pro Ile Leu Leu Ala Cys Glu Ala Arg Gln Val Val
100 105 110
Leu Leu Glu Ser Leu Asp Ser Phe Val Asn Ile Ser
115 120

<210>771
<211>117
<212>PRT
<213>Chlamydia trachomatis
<400>771
Lys Ile Leu Leu Thr Gln Val Lys Tyr Arg Lys Ile Phe Val Leu Gly
1 5 10 15
Glu Ser Leu Val Met Asp Thr Gln Phe Ile Ala Ser Arg Ser Val Arg
20 25 30
Asn Gln Gly Val Thr Ser Val Ser Gly Gln Val Lys Glu Glu Leu Met
35 40 45
Ser Pro Ser Asn Met Thr Phe Glu Gly Pro Val Arg Ser Leu Asp Gln
50 55 60
Leu Arg Gln Ala Leu Ile Ala Lys Met Gly Glu Gln Lys Gly Gln Glu
65 70 75 80
Met Tyr Asp Arg Phe Ile Gln Ser Leu Leu Ile Ser Thr Phe Thr Thr
85 90 95
Val His Lys Glu Met Asp Arg Ala Gln Arg Ala Ser Lys Lys Met Arg
100 105 110
Ser Val Tyr Arg Asp
115

<210>772
<211>269
<212>PRT
<213>Chlamydia trachomatis
<400>772
Met Phe Pro Glu Asn Lys Met Leu Leu Ile Ala Gly Pro Cys Val Ile
1 5 10 15
Glu Asp Asn Ser Val Phe Glu Thr Ala Arg Arg Leu Lys Glu Ile Val
20 25 30
Ala Pro Tyr Ala Ser Ser Val His Trp Ile Phe Lys Ser Ser Tyr Asp
35 40 45
Lys Ala Asn Arg Ser Ser Val His Asn Tyr Arg Gly Pro Gly Leu Arg
50 55 60
Leu Gly Leu Gln Thr Leu Ala Lys Ile Lys Glu Glu Leu Asp Val Glu
65 70 75 80
Ile Leu Thr Asp Val His Ser Pro Asp Glu Ala Arg Glu Ala Ala Lys
85 90 95
Val Cys Asp Ile Ile Gln Val Pro Ala Phe Leu Cys Arg Gln Thr Asp
100 105 110
Leu Leu Val Thr Ala Gly Glu Thr Gln Ala Ile Val Asn Ile Lys Lys
115 120 125
Gly Gln Phe Leu Ser Pro Trp Glu Met Gln Gly Pro Ile Asp Lys Val
130 135 140
Leu Ser Thr Gly Asn Asn Lys Ile Ile Leu Thr Glu Arg Gly Cys Ser
145 150 155 160
Phe Gly Tyr Asn Asn Leu Val Ser Asp Met Arg Ser Ile Glu Val Leu
165 170 175
Arg Arg Phe Gly Phe Pro Val Val Phe Asp Gly Thr His Ser Val Gln
180 185 190
Leu Pro Gly Ala Leu His Ser Gln Ser Gly Gly Gln Thr Glu Phe Ile
195 200 205
Pro Val Leu Thr Arg Ser Ala Ile Ala Ala Gly Val Gln Gly Leu Phe

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    210                 215                 220
Ile Glu Thr His Pro Asn Pro Ser Ser Ala Leu Ser Asp Ala Ala Ser
225                 230                 235                 240
Thr Leu Ser Leu Lys Asp Leu Glu Arg Leu Leu Pro Ala Trp Val Gln
                245                 250                 255
Leu Phe Thr Tyr Ile Gln Glu Met Asp Ala Val Ser Val
            260                 265
<210>773
<211>128
<212>PRT
<213>Chlamydia trachomatis
<400>773
Met Leu Phe Leu Tyr Asp Xaa Xaa Leu Phe His Gly Ile Trp Cys Val
  1               5                  10                  15
Val Val Leu Ile Leu Cys Ala Cys Val Thr Ala Leu Ala Val Val Lys
            20                  25                  30
Met Gly Asp Phe Thr Asn Pro Thr Leu Val His Gln Asp Ser Val Thr
        35                  40                  45
Pro Ala Pro Pro Phe Leu Lys Ile Lys Lys Leu Gly Val Arg Lys Arg
    50                  55                  60
Ile Ile Ser Pro Glu Lys Gln Leu Phe Tyr Cys Thr Ile Asp Lys Ser
65                  70                  75                  80
Cys Met Glu Leu His Phe Ser Asn Thr Ser Leu His Cys Arg Glu Leu
                85                  90                  95
Leu Ser His Leu Thr Gly Cys Leu Gln Thr Glu Xaa Ala Asp Pro Leu
            100                 105                 110
Cys Phe Leu Glu Val Leu Glu Asp Phe Leu Ile Thr Lys Ile Ile Leu
        115                 120                 125
<210>774
<211>239
<212>PRT
<213>Chlamydia trachomatis
<400>774
Met Ser Val Leu Ser Val Cys Asn Leu Ile Lys Lys Tyr Asn Lys Lys
  1               5                  10                  15
Pro Val Thr Asn Asp Val Ser Phe Gln Val Asn Ala Gly Glu Ile Val
            20                  25                  30
Gly Leu Leu Gly Pro Asn Gly Ala Gly Lys Thr Thr Ala Phe Tyr Gln
        35                  40                  45
Thr Val Gly Leu Ile Arg Pro Asp Ser Gly Lys Ile Leu Phe Lys Asn
    50                  55                  60
Thr Asp Ile Thr Lys Lys Pro Met Asp Tyr Arg Ala Arg Leu Gly Ile
65                  70                  75                  80
Gly Tyr Leu Ala Gln Glu Pro Thr Ile Phe Lys Glu Leu Thr Val Lys
                85                  90                  95
Glu Asn Leu Ile Cys Val Leu Glu Ile Ile Tyr Lys Thr Arg Lys Glu
            100                 105                 110
Gln Thr His Leu Leu Asn Ala Leu Ile Asp Asp Leu Gln Leu Thr Thr
        115                 120                 125
Ser Leu His Lys Lys Ala Gly Ser Leu Ser Gly Gly Glu Arg Arg Arg
    130                 135                 140
Leu Glu Ile Ala Cys Val Leu Ala Leu Asn Pro Ser Val Leu Leu Leu
145                 150                 155                 160
Asp Glu Pro Phe Ala Asn Val Asp Pro Leu Val Ile Gln Asn Val Lys
                165                 170                 175
Tyr Leu Ile Lys Ile Leu Ala Ser Arg Gly Ile Gly Ile Leu Ile Thr
            180                 185                 190
Asp His Asn Ala Lys Glu Leu Leu Ser Ile Ala Asp Arg Cys Tyr Leu
        195                 200                 205
Ile Ile Asp Gly Lys Ile Phe Phe Glu Gly Ser Ser Ala Gln Met Ile
    210                 215                 220
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Ala Asn Pro Met Val Arg Gln His Tyr Leu Gly Asp Ser Phe Ser
225 230 235

<210>775
<211>377
<212>PRT
<213>Chlamydia trachomatis
<400>775
Ile Gly Gly Thr Phe Pro Arg Thr Pro Leu Ile Phe Glu Glu Ile Ala
1 5 10 15
Leu Leu Ser Glu Glu Gln Asn Gln Val Leu Lys Thr Val Leu Asn Ser
20 25 30
Cys Phe Ser Leu Val Cys Gly Gly Pro Gly Thr Gly Lys Thr Phe Leu
35 40 45
Ala Val Gln Met Ile Xaa Leu Ile Leu Ala Gln Ile Pro Ser Ala Gln
50 55 60
Ile Met Val Ala Ser Pro Thr Gly Lys Ala Ser Ala His Leu His Ser
65 70 75 80
Val Leu Thr Ser Gln Gly Ile Val Gly Asp Ser Val Glu Val Val Thr
85 90 95
Ile His Lys Phe Leu Lys Asp Met Arg Arg Gly Arg Ser Pro Val Asp
100 105 110
Leu Leu Leu Val Asp Glu Gly Ser Met Val Thr Met Asn Leu Leu His
115 120 125
Gly Leu Ile Lys Thr Ile Arg Gly Glu Ser Arg Gly Glu Thr Ile Tyr
130 135 140
Ala Asp Arg Met Val Ile Phe Gly Asp Ala Asn Gln Leu Ser Pro Ile
145 150 155 160
Gly Ile Gly Val Gly Asn Pro Phe His Glu Val Val Ser Glu Phe Ser
165 170 175
Lys Gln Ala Cys Phe Leu Ser Thr Ser His Arg Ala Lys His Lys Glu
180 185 190
Leu Gln Glu Leu Ala Ser Ala Val Leu Arg Lys Glu Leu Ile Pro Phe
195 200 205
Gln Pro Leu Pro Ser Arg Gln Glu Ala Ile Arg Arg Leu Ser Phe Ala
210 215 220
Phe Thr Gln Ala Ala Lys Glu Gly Val Ser Leu Cys Ala Leu Thr Pro
225 230 235 240
Met Arg Gln Gly Leu Trp Gly Phe Leu Gln Leu Asn Arg Leu Leu Phe
245 250 255
Asn Glu Met Gln Glu Lys His Pro Arg Ala Pro Ile Pro Ile Ile Val
260 265 270
Thr Glu Arg Tyr Glu Thr Trp Gly Leu Thr Asn Gly Asp Thr Gly Val
275 280 285
Leu Asp Pro Val Thr Glu Gln Leu Arg Phe Met Asn Gly Glu Ile Leu
290 295 300
His Gln Ala Asp Phe Pro Tyr Tyr Ser Tyr Asn Tyr Val Met Ser Val
305 310 315 320
His Lys Ser Gln Gly Ser Glu Tyr Asp Arg Val Ile Val Ile Leu Pro
325 330 335
Lys Gly Ser Glu Val Phe Asp Ser Ala Ile Leu Tyr Thr Ala Ile Thr
340 345 350
Arg Thr Lys Gln His Val Glu Ile Trp Ala Asp Arg Glu Ala Leu Glu
355 360 365
Ala Ile Ile Leu Lys Arg Gly Arg Tyr
370 375

<210>776
<211>140
<212>PRT
<213>Chlamydia trachomatis
<400>776
Ile His Ser Thr Thr Ala Lys Arg Lys Ile Phe Pro Val Asn Val Asn

Substitute Sheet (Rule 26)

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  1               5                  10                  15
Gln His Val Gln Asp Ile Val Pro Ser Leu Leu Ala Gln His Ile Leu
            20                  25                  30
Leu Pro Phe Asp Ile Ala Phe Ala Gln Lys His Leu Ser Gln Glu Glu
        35                  40                  45
Phe Ser Gln Glu Ala Glu Ala Phe Leu Ala Thr Ala Ser Ala Leu Leu
    50                  55                  60
Arg Cys Gly Tyr Pro Tyr Phe Ser Ile Cys Asp Glu Thr Ile His Pro
65                  70                  75                  80
Thr Leu Pro Gly Ile Ser Asn Lys Gln Leu Phe Gln Trp Phe Gln Leu
                85                  90                  95
Leu Ser Ser Arg Ile Lys Glu Glu Leu Phe Glu Val Val Asn His Lys
            100                 105                 110
Ile Tyr Leu Arg Ser Leu Phe Leu Leu Arg Glu Lys Val Phe His Lys
        115                 120                 125
Leu His Arg Leu Ala Gly Arg Phe His Val His Leu
    130                 135                 140
<210>777
<211>416
<212>PRT
<213>Chlamydia trachomatis
<400>777
Lys Leu Ile Gly Ala Arg Arg Tyr Ala Glu Gly Arg Ile Val Ile Asn
  1               5                  10                  15
Ser Ile Phe Asn Lys Ile Phe Ser Arg Glu Tyr Ala Trp Ser Val Asp
            20                  25                  30
Met Tyr Asn Arg Leu Val Leu Met Leu Gly Gln Ser Tyr Leu Leu Glu
        35                  40                  45
Leu Gln Glu Gly Val Arg Ser Asp Leu Leu Pro Glu Tyr Tyr Glu Thr
    50                  55                  60
Ile Leu Phe Tyr Gln Lys Gln Met Lys Gly Phe Asp Ala Gly Ala Tyr
65                  70                  75                  80
Lys Thr Phe Phe Pro Glu Ser Met Leu Val Pro Thr Ile Met Gln His
                85                  90                  95
Ile Phe Val Ile Pro Glu Thr Gln Leu Pro Leu Phe Met Asp Ala Leu
            100                 105                 110
Leu Met Trp Glu Asn Ser Tyr Val His Pro Asp Tyr Ser Leu Val Leu
        115                 120                 125
Glu Arg Met Lys Pro Ala Val Leu Gln Asp Gly Ile His Thr Gln Lys
    130                 135                 140
Ile Cys Gln Ala Ile Ala Asp Ser Lys Ile Lys Lys Leu Lys Glu Lys
145                 150                 155                 160
Leu Ile Glu Leu Phe Ser Asp Glu Leu Val Phe Cys Val Ser Gln Gly
                165                 170                 175
Asn Thr Val Cys Ala Asp Gln Tyr Leu Ala Leu Leu Lys Thr Leu Asp
            180                 185                 190
Pro Arg Ser Ser Trp Gly His Lys Leu Leu Leu Ser Glu Lys Glu Ile
        195                 200                 205
Val Asn Met Val Cys Glu Asp Asp Ala Gln Tyr Ser Arg Leu Lys Asp
    210                 215                 220
Tyr Leu Leu Leu Trp Glu Glu Gln Asp Ile Ala Asp Val Asp Arg Gln
225                 230                 235                 240
Gln Leu Val His Tyr Leu Phe Phe Ser Ala Lys His Leu Trp Arg Gly
                245                 250                 255
Gly Gln Glu Glu Ala Cys Leu Arg Leu Leu Lys Glu Ile Leu Leu Phe
            260                 265                 270
Ser Gln Asn Glu Lys Ala Cys Leu Asn Arg Thr Leu Arg Leu Val Lys
        275                 280                 285
Asp Phe Tyr Thr Gln Ala Leu Ala Met Arg Asn Phe Thr His Leu Val
    290                 295                 300
Trp Ile Glu Asn Phe Leu Asp Glu Val Gly Leu Pro Lys Thr Leu Ala
```

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305                 310                 315                 320
Ser Asp Ala Glu Ile Ala Asn Cys Leu Ala Asp Ala Gln Tyr Leu Phe
                325                 330                 335
Ser Lys Gly Asp Tyr Arg Leu Cys Ile Val Tyr Ser Ser Trp Leu Ala
            340                 345                 350
Arg Val Ala Pro Ser Thr Glu Ala Leu Gln Leu Leu Gly Leu Ser Leu
        355                 360                 365
Val Glu Gln Lys Glu Tyr Thr Glu Ala Leu Glu Val Phe Gln Lys Leu
    370                 375                 380
Pro Leu Gly Glu Asp Ala Trp Asn Ser Gln Val His Lys Ala Ser Leu
385                 390                 395                 400
Leu Cys Tyr Lys Tyr Ile Ala Arg Gln Gln Lys Glu Lys Ser Phe Pro
                405                 410                 415
```

<210>778
<211>193
<212>PRT
<213>Chlamydia trachomatis
<400>778

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Val Val Arg Val Phe Leu Leu Val Val Phe Leu Leu Ser Cys Phe Ser
  1                 5                  10                  15
Ala Gly Gly Arg Ser Tyr Val Phe Phe Ser Ser Arg Asp Asp Ser Pro
             20                  25                  30
Ser His Tyr Asp His Thr His Arg Thr Val Ala Arg Leu Arg Glu Gly
         35                  40                  45
Ser Thr Leu Ser Glu Gly Leu Ser Met Glu Gln Glu Gln Met Tyr Leu
     50                  55                  60
Leu Cys Cys Gln Gly Phe Ser Leu Gln Ile Gln Arg Lys Phe Gln Glu
 65                  70                  75                  80
Ser Lys Glu Ile Phe Ser Arg Ile Asp Lys Arg Lys Thr Ser Ala Pro
                 85                  90                  95
Phe Val Leu Gln Arg Glu Leu Leu Glu Gly Arg Ile Leu Asn Ala Tyr
            100                 105                 110
Phe Leu Asn Asn Leu Ser Leu Met Ala Glu Cys Ile Ala Glu Leu Glu
        115                 120                 125
Arg Val Ser Gly Ser Glu Ala His Leu Leu Phe Phe Lys Ala Leu His
    130                 135                 140
Ala His Arg Thr Lys Gln Tyr Asn Leu Ala Val Asp Val Leu Ser Arg
145                 150                 155                 160
Trp Phe Gly His Val Asp Gln Thr Lys Pro Leu Cys Leu Asp Thr Asn
                165                 170                 175
Val Tyr Glu Leu Phe Ser Pro Tyr Val Leu Glu Glu Ile Ala Ala Glu
            180                 185                 190
Ser
```

<210>779
<211>386
<212>PRT
<213>Chlamydia trachomatis
<400>779

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Leu Ser Leu Lys Tyr Cys Lys Leu Thr Pro Arg Asn Ile Arg Gly Arg
  1                 5                  10                  15
Arg Trp Gln Pro Leu Lys Val Glu Ser Ser Arg Gln Arg Asn Lys Gly
             20                  25                  30
Val Tyr Met Ser Val Pro Asp Arg Lys Arg Ala Leu Glu Ala Ala Ile
         35                  40                  45
Ala Tyr Ile Glu Lys Gln Phe Gly Ala Gly Ser Ile Met Ser Leu Gly
     50                  55                  60
Lys His Ser Ser Ala His Glu Ile Ser Thr Ile Lys Thr Gly Ala Leu
 65                  70                  75                  80
Ser Leu Asp Leu Ala Leu Gly Ile Gly Gly Val Pro Lys Gly Arg Ile
                 85                  90                  95
```

```
Val Glu Ile Phe Gly Pro Glu Ser Ser Gly Lys Thr Thr Leu Ala Thr
            100                 105                 110
His Ile Val Ala Asn Ala Gln Lys Met Gly Gly Val Ala Ala Tyr Ile
        115                 120                 125
Asp Ala Glu His Ala Leu Asp Pro Asn Tyr Ala Ala Leu Ile Gly Ala
    130                 135                 140
Asn Ile Asn Asp Leu Met Ile Ser Gln Pro Asp Cys Gly Glu Asp Ala
145                 150                 155                 160
Leu Ser Ile Ala Glu Leu Leu Ala Arg Ser Gly Ala Val Asp Val Ile
                165                 170                 175
Val Ile Asp Ser Val Ala Ala Leu Val Pro Lys Ser Glu Leu Glu Gly
            180                 185                 190
Glu Ile Gly Asp Val His Val Gly Leu Gln Ala Arg Met Met Ser Gln
        195                 200                 205
Ala Leu Arg Lys Leu Thr Ala Thr Leu Ala Arg Thr Asn Thr Cys Ala
    210                 215                 220
Ile Phe Ile Asn Gln Ile Arg Glu Lys Ile Gly Val Ser Phe Gly Asn
225                 230                 235                 240
Pro Glu Thr Thr Thr Gly Gly Arg Ala Leu Lys Phe Tyr Ser Ser Ile
                245                 250                 255
Arg Ile Asp Ile Arg Arg Ile Gly Ser Ile Lys Gly Gly Glu Asn Phe
            260                 265                 270
Asp Ile Gly Asn Arg Ile Lys Val Lys Val Ala Lys Asn Lys Leu Ala
        275                 280                 285
Pro Pro Phe Arg Thr Ala Glu Phe Asp Ile Leu Phe Asn Glu Gly Ile
    290                 295                 300
Ser Ser Ala Gly Cys Ile Ile Asp Leu Ala Val Glu Lys Asn Ile Ile
305                 310                 315                 320
Asp Lys Lys Gly Ser Trp Phe Asn Tyr Gln Asp Arg Lys Leu Gly Gln
                325                 330                 335
Gly Arg Glu Ala Val Arg Glu Glu Leu Lys Arg Asn Lys Glu Leu Phe
            340                 345                 350
His Glu Leu Glu Arg Arg Ile Tyr Glu Ser Val Gln Ala Ser Gln Ala
        355                 360                 365
Pro Ala Ala Ala Cys Val Asp Ser Glu Ser Arg Glu Val Ala Glu Ala
    370                 375                 380
Ala Lys
385
<210>780
<211>178
<212>PRT
<213>Chlamydia trachomatis
<400>780
Met Lys Asn Ile Val Glu Gln Lys Arg Cys Leu Arg Arg Glu Gly Leu
  1               5                  10                  15
Ala Lys Arg Glu Gln Leu Ser Val Gln Arg Arg Asp Glu Ala Ala Arg
             20                  25                  30
Glu Leu Met His Phe Val Met Gln Thr Ile Xaa Gln Gly Phe Val Leu
         35                  40                  45
Ser Tyr Ile Pro Phe Arg Ser Glu Leu Asp Val Arg Gly Ile Asn Ala
     50                  55                  60
Trp Leu Ala Gln Glu Asn Arg Leu Leu Leu Pro Lys Met Gln Gly Met
 65                  70                  75                  80
Asp Ile Val Pro Ile Ala Leu Pro Phe Thr Met Ile Glu Ser Leu Tyr
                 85                  90                  95
Ser Pro Lys Asp Leu Asn Gln Ile Glu Gly Glu Glu Ile Glu Ala Gln
            100                 105                 110
Gln Ile Ala Ala Ala Leu Ile Pro Ala Ile Val Phe Asp Gln Asn Lys
        115                 120                 125
Phe Arg Leu Gly Tyr Gly Gly Gly Tyr Tyr Asp Arg Phe Leu Ser Lys
    130                 135                 140
```

```
Tyr Pro Tyr Ile Trp Thr Ile Gly Val Gly Phe Lys Glu Gln Leu Leu
145                 150                 155                 160
Ala Tyr Leu Pro Arg Glu Glu His Asp Val Pro Leu Asp Gln Leu Tyr
                165                 170                 175
Leu Thr
```

<210>781
<211>434
<212>PRT
<213>Chlamydia trachomatis
<400>781

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Val Gly Arg Ser Arg Gly Gly Leu Gly Thr Met Cys Val Ser Arg Ser
  1               5                  10                  15
Leu Arg Trp Cys Leu Cys Phe Leu Leu Leu Cys Gly Trp Val Asp Ala
             20                  25                  30
Gly Val Tyr Asp Lys Leu Arg Leu Thr Gly Ile Asn Ile Ile Asp Arg
         35                  40                  45
Asn Gly Leu Ser Glu Thr Ile Cys Ser Lys Glu Lys Leu Gln Lys Tyr
     50                  55                  60
Thr Lys Ile Asp Phe Leu Ser Pro Gln Pro Tyr Gln Lys Val Met Arg
 65                  70                  75                  80
Thr Tyr Lys Asn Ala Ala Gly Glu Ser Val Ala Cys Leu Thr Thr Tyr
                 85                  90                  95
Tyr Pro Asn Gly Gln Ile Arg Gln Tyr Leu Glu Cys Leu Asn Asn Arg
            100                 105                 110
Ala Phe Gly Arg Tyr Arg Glu Trp His Ser Asn Gly Lys Ile His Ile
        115                 120                 125
Gln Ala Glu Val Ile Gly Gly Ile Ala Asp Leu His Pro Ser Ala Glu
    130                 135                 140
Ala Gly Trp Leu Phe Asp Gly Thr Thr Tyr Ala His Asp Ser Glu Gly
145                 150                 155                 160
Arg Leu Glu Ala Val Ile His Tyr Glu Lys Gly Leu Leu Glu Gly Ile
                165                 170                 175
Ser Leu Tyr Tyr His Ala Asn Gly Asn Val Trp Lys Glu Cys Pro Tyr
            180                 185                 190
His Lys Gly Val Ala His Gly Asp Phe Leu Val Phe Thr Glu Glu Gly
        195                 200                 205
Ser Leu Leu Lys Lys Gln Thr Phe Cys Lys Gly Gln Leu Ser Gly Cys
    210                 215                 220
Ala Leu Arg Tyr Glu Pro Gly Ser Gln Ser Leu Leu Ser Glu Glu Glu
225                 230                 235                 240
Tyr Lys Gln Gly Lys Leu Arg Ser Gly Lys Tyr Tyr Asp Pro Leu Thr
                245                 250                 255
Lys Glu Glu Ile Ala Cys Val Val Asn Gly Lys Gly Lys Gln Val Ile
            260                 265                 270
Tyr Gly Lys Tyr Ala Ile Ile Glu Thr Arg Gln Ile Val His Gly Val
        275                 280                 285
Pro His Gly Glu Val Leu Leu Phe Asp Glu His Gly Lys Ser Leu Leu
    290                 295                 300
Gln Ala Tyr Ser Leu Ile Asn Gly Gln Lys Glu Gly Glu Glu Val Phe
305                 310                 315                 320
Phe Tyr Pro Gly Gly Glu Gly Arg Lys Met Leu Leu Thr Trp Ser Gln
                325                 330                 335
Gly Ile Leu Gln Gly Ala Val Lys Thr Trp Tyr Pro Asn Gly Ala Leu
            340                 345                 350
Glu Ser Ser Lys Glu Leu Val Gln Asn Lys Lys Thr Gly Ile Leu Met
        355                 360                 365
Leu Tyr Tyr Pro Glu Gly Gln Val Met Ala Thr Glu Glu Tyr Val Asp
    370                 375                 380
Asp Leu Leu Ile Lys Gly Glu Tyr Phe Arg Pro Asn Asp Arg Tyr Pro
385                 390                 395                 400
```

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Tyr Ala Lys Val Glu Lys Gly Ser Gly Thr Ala Val Phe Phe Ser Ala
                405                 410                 415
Thr Gly Gly Leu Leu Lys Lys Val Leu Tyr Glu Asp Gly Lys Pro Val
            420                 425                 430
Ile His

<210>782
<211>111
<212>PRT
<213>Chlamydia trachomatis
<400>782
Glu Arg Lys Thr Met Gly Ile Trp Val Tyr Leu Gly Ser Asn Asn His
  1               5                  10                  15
Asn Asn Thr Gly Met Ser Ser Ser Ser Ile Trp Ser Ser Phe Trp Lys
             20                  25                  30
Glu Asn Asn Val Leu Phe Ser Pro Lys Val Cys Ser Cys His Asp Lys
         35                  40                  45
Arg Leu Ser Ser Lys Lys Ala Phe Arg Ser Leu Thr Ala Arg Leu Leu
     50                  55                  60
Thr Thr Gln Ala Val Ala Gly Ser Leu Ala Arg Ala Ser Arg Ser Leu
 65                  70                  75                  80
Phe Lys Lys Thr Arg Phe Ser Pro Trp Ala Ile Gln Leu Gly Lys Leu
                85                  90                  95
Ala Cys Leu Cys Ala Ala Phe Ser Arg Ala Phe Leu Ile Ala Thr
            100                 105                 110
<210>783
<211>159
<212>PRT
<213>Chlamydia trachomatis
<400>783
Cys Thr Asn Arg Ser Ala Arg Glu Gly Ile Met Arg Arg Leu Gly Val
  1               5                  10                  15
Trp Val Leu Leu Leu Leu Ala Ser Gly Ala Ala Ser Leu Pro Ala Ile
             20                  25                  30
Gly Ala Trp Cys Trp Arg Gln Arg Thr Ala Glu Ala Trp Glu Asn Leu
         35                  40                  45
Leu Ile Asp Met Arg Asp Phe Gln Ser Lys Arg Glu Arg Ser Ser Gln
     50                  55                  60
Val Ala Ile Lys Asn Ala Arg Leu Lys Ala Ala His Lys Gln Ala Ser
 65                  70                  75                  80
Phe Pro Asn Trp Ile Ala Gln Gly Glu Asn Leu Val Phe Leu Asn Lys
                85                  90                  95
Glu Arg Asp Ala Leu Ala Lys Leu Pro Ala Thr Ala Trp Val Val Arg
            100                 105                 110
Ser Arg Ala Val Lys Asp Arg Lys Ala Phe Leu Glu Asp Asn Arg Leu
        115                 120                 125
Ser Trp Gln Glu Gln Thr Leu Gly Glu Lys Ser Thr Leu Phe Ser Phe
    130                 135                 140
Gln Lys Glu Leu Gln Ile Asp Asp Glu Asp Ile Pro Val Leu Leu
145                 150                 155
<210>784
<211>97
<212>PRT
<213>Chlamydia trachomatis
<400>784
Ile Pro Pro Thr Val Pro Thr Asn Gln Glu Val Met Glu Val Leu Gly
  1               5                  10                  15
Arg Met Thr Ala Asn Leu Pro Ser Val Ser Phe Ser His Tyr Leu Tyr
             20                  25                  30
Lys Leu Glu Asp Ile Pro Ser Glu Glu Arg Pro Leu Gly Gly Tyr Arg
         35                  40                  45
```

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Ala Tyr Ile Ser Leu Gln Gly Ala Ala Asn Asp Glu Asp Phe Ala Ser
50 55 60
Phe Ile Asp Gln Leu Ser Ala Trp Ile Gly Ala Arg Val Leu Ser Lys
65 70 75 80
Lys Leu Ala Asp Arg Gln Phe Asp Val Arg Ile Ala Leu Gln Gly Arg
85 90 95
Gly

<210>785
<211>227
<212>PRT
<213>Chlamydia trachomatis
<400>785
Met Asp Phe Lys Leu Pro Ile Tyr Cys Ile Gly Val Thr Gln Ser Ala
1 5 10 15
Glu Asn Val Thr Arg Ile Ala Ile Leu Gln Lys Thr Cys Lys Gly Trp
20 25 30
Ser Leu Cys Arg Cys Glu Lys Leu Thr Glu Thr Gly Ala Leu Ser Trp
35 40 45
Pro Lys Arg Phe Leu Ser Ser Lys Val Val Leu Ser Leu Gln Gly Gln
50 55 60
Glu Thr Leu Val Lys Ser Val Ser Ser Ser Leu Lys Ser Lys Lys Asn
65 70 75 80
Phe Leu Lys Met Val Tyr Ala Glu Gln Glu Ala Thr Ala Ala Phe Pro
85 90 95
Leu Lys Asp Leu Val Ile Ala His Asp Leu Gly Glu Trp Asn Ser Ala
100 105 110
Gln Glu Arg Val Val Thr Leu Trp Met Leu Gln Arg Gln Ser Val Ala
115 120 125
Leu Ala Thr Ala Leu Leu Glu Glu Lys Gly Gly Phe Ala Thr His Ile
130 135 140
Ser Cys Arg Ala Lys Asp Leu Phe Ser Ala Leu Gln Gln Ser Leu Leu
145 150 155 160
Arg Asn Leu Glu Thr Tyr Phe Phe Val Tyr Glu Gly Leu Asp Glu Thr
165 170 175
Val Cys Leu Phe Val Gln Glu Gly Ser Val Leu Leu Ser Arg Ser Phe
180 185 190
Lys Asn Asp Ser Glu Ser Leu Leu Asp Asp Leu Leu Ala Ser Phe Ala
195 200 205
Tyr Val Gln Glu Val Tyr Thr Ala Ser Phe Ile Arg Asp Pro Arg Arg
210 215 220
Leu Ser Ile
225
<210>786
<211>334
<212>PRT
<213>Chlamydia trachomatis
<400>786
Met Ala Pro Ser Ile Phe Ile Lys Asn Leu Pro Leu Lys Ser Pro Val
1 5 10 15
Val Tyr Ala Pro Leu Ala Gly Phe Ser Asp Phe Pro Tyr Arg Arg Met
20 25 30
Ser Ala Glu Tyr Arg Pro Ala Leu Met Phe Cys Glu Met Val Lys Met
35 40 45
Glu Gly Leu His Tyr Cys Pro Gln Arg Thr Leu Arg Leu Leu Asp Phe
50 55 60
Ala Glu Ser Met Arg Pro Ile Gly Gly Gln Leu Cys Gly Ser Arg Pro
65 70 75 80
Asp Leu Ala Gly Glu Ser Ala Lys Ile Leu Glu Gly Leu Gly Phe Asp
85 90 95
Leu Ile Asp Leu Asn Cys Gly Cys Pro Thr Asp Arg Ile Thr Lys Asp

```
                100                 105                 110
Gly Ser Gly Ser Gly Met Leu Lys Thr Pro Glu Leu Ile Gly Lys Val
            115                 120                 125
Val Glu Lys Met Val Glu Val Val Ser Val Pro Val Thr Val Lys Ile
    130                 135                 140
Arg Ser Gly Trp Asp Phe Asp His Ile Asn Val Glu Glu Thr Val Arg
145                 150                 155                 160
Ile Ile Lys Glu Ser Gly Ala Ser Ala Val Phe Val His Gly Arg Thr
                165                 170                 175
Arg Ser Gln Gly Tyr Gln Gly Pro Ser Asn Leu Glu Phe Ile Ser Arg
            180                 185                 190
Ala Lys Gln Ala Ala Gly Asp Asp Phe Pro Val Phe Gly Asn Gly Asp
        195                 200                 205
Val Phe Ser Pro Glu Ala Ala Lys Thr Met Leu Glu Thr Thr His Cys
    210                 215                 220
Asp Gly Val Leu Val Ala Arg Gly Thr Met Gly Ala Pro Trp Ile Gly
225                 230                 235                 240
Lys Gln Ile Glu Asp Tyr Leu Thr Thr Gly Thr Tyr Ser Ser Pro Ser
                245                 250                 255
Phe Ser Thr Arg Lys Gln Ala Phe Val Gln His Leu Gln Trp Ile Glu
            260                 265                 270
Glu Tyr Tyr Gln Ser Glu Glu Lys Leu Leu Thr Asp Thr Arg Lys Leu
        275                 280                 285
Cys Gly His Tyr Leu Ile Leu Ser Pro Lys Val Arg Ser Leu Arg Ala
    290                 295                 300
Asn Leu Ala Lys Ala Ser Ser Ser Gln Glu Val Tyr Gln Leu Ile Asp
305                 310                 315                 320
Gly Phe Glu Glu Leu Thr Glu Glu Glu Glu Leu Leu Ser Glu
                325                 330
```

<210>787
<211>265
<212>PRT
<213>Chlamydia trachomatis
<400>787

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Asn Arg Leu Ser Lys Cys His Lys Gly Lys Leu Val Lys Ile Trp Ala
  1               5                  10                  15
Lys Asn Arg Tyr Phe Phe Gly Cys Ser Glu Tyr Pro Thr Cys Asp Tyr
             20                  25                  30
Lys Thr Ser Glu Glu Glu Leu Thr Phe Asp Lys Asn Glu Tyr Ala Glu
         35                  40                  45
Asp Thr Pro Trp Asp Ala Pro Cys Ala Leu Cys Gly Gly Glu Met Lys
     50                  55                  60
Val Arg His Gly Lys Phe Gly Ser Phe Leu Gly Cys Glu Asn Tyr Pro
 65                  70                  75                  80
Lys Cys His Tyr Ile Val Asn Leu Phe Lys Lys Gly Glu Ala Gly Ala
                 85                  90                  95
Glu Pro Glu Ala Thr Val His Cys Pro Ala Glu Gly Cys Thr Gly His
            100                 105                 110
Leu Val Lys Arg Arg Ser Arg Phe Asn Lys Met Phe Tyr Ser Cys Ser
        115                 120                 125
Glu Tyr Pro Ala Cys Ser Val Ile Gly Asn Ser Val Asp Ala Val Ile
    130                 135                 140
Glu Lys Tyr Ala Gly Thr Pro Lys Thr Pro Tyr Glu Lys Lys Pro Lys
145                 150                 155                 160
Ala Lys Lys Ser Ile Ala Ser Thr Lys Gly Lys Ala Ala Lys Thr Val
                165                 170                 175
Lys Lys Ser Ser Ala Thr Thr Lys Lys Arg Ala Thr Lys Ala Tyr Thr
            180                 185                 190
Pro Ser Ala Ala Leu Ala Gly Val Ile Gly Ala Asp Pro Val Gly Arg
        195                 200                 205
Pro Glu Ala Thr Lys Lys Leu Trp Glu Tyr Ile Lys Glu Lys Gly Leu
```

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```
    210                 215                 220
Gln Ser Pro Gln Asn Lys Lys Ile Ile Ile Pro Asp Ser Lys Leu Gln
225                 230                 235                 240
Gly Val Ile Gly Ala Asp Pro Ile Asp Met Phe Ala Leu Ser Lys Lys
                245                 250                 255
Leu Ser Ala His Leu Ile Lys Glu Glu
            260                 265
```

<210>788
<211>615
<212>PRT
<213>Chlamydia trachomatis
<400>788

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Leu Cys Glu Arg Leu Arg Ser Arg Leu Leu Ala Leu Cys Met Lys Lys
  1               5                  10                  15
Ser Leu Ile Ile Val Glu Ser Pro Ala Lys Ile Lys Thr Leu Arg Lys
            20                  25                  30
Leu Leu Gly Glu Gly Phe Ile Phe Asp Ser Ser Leu Gly His Ile Val
        35                  40                  45
Asp Leu Pro Ala Lys Gly Phe Gly Ile Asp Ile Glu Asn Gly Phe Val
    50                  55                  60
Pro Asp Tyr Gln Ile Leu Glu Gly Lys Glu Glu Val Ile Arg Lys Ile
65                  70                  75                  80
Cys Ala Glu Ala Lys Lys Cys Asp Val Val Tyr Leu Ala Pro Asp Pro
                85                  90                  95
Asp Arg Glu Gly Glu Ala Ile Ala Trp His Ile Ala Asn Gln Leu Pro
            100                 105                 110
Lys Asp Thr Lys Ile Gln Arg Ile Ser Phe Asn Ala Ile Thr Lys Gly
        115                 120                 125
Ala Val Thr Glu Ala Leu Lys His Pro Arg Glu Ile Asp Met Ala Leu
    130                 135                 140
Val Asn Ala Gln Gln Ala Arg Arg Phe Leu Asp Arg Ile Val Gly Tyr
145                 150                 155                 160
Lys Ile Ser Pro Ile Leu Gly Arg Lys Leu Gln Arg Trp Ser Gly Val
                165                 170                 175
Ser Ala Gly Arg Val Gln Ser Val Ala Leu Lys Leu Val Val Asp Arg
            180                 185                 190
Glu Tyr Ala Ile Glu Arg Phe Val Pro Val Glu Phe Trp Asn Ile Arg
        195                 200                 205
Val His Leu Lys Asp Pro Gln Thr Gln Lys Thr Phe Trp Ala His Leu
    210                 215                 220
His Ser Val Asn Gly Lys Lys Trp Glu Lys Glu Ile Pro Glu Gly Lys
225                 230                 235                 240
Thr Ser Asp Glu Val Ile Leu Ile Asp Ser Lys Glu Lys Ala Asp Glu
                245                 250                 255
Ile Val Ala Leu Leu Glu Ser Ala Thr Tyr Val Val Asp Arg Val Glu
            260                 265                 270
Ser Lys Glu Lys Lys Arg His Ala Tyr Pro Pro Phe Ile Thr Ser Thr
        275                 280                 285
Leu Gln Gln Glu Ala Ser Arg His Tyr Arg Phe Ser Ser Ser Arg Thr
    290                 295                 300
Met Asn Ile Ala Gln Thr Leu Tyr Glu Gly Val Asp Leu Asp Ser Gln
305                 310                 315                 320
Gly Ala Val Gly Leu Ile Thr Tyr Met Arg Thr Asp Ser Val Arg Thr
                325                 330                 335
Asp Pro Glu Ala Val Lys Gln Val Arg Lys Tyr Ile Glu Gly His Phe
            340                 345                 350
Gly Lys Glu Phe Val Pro Ser Ser Pro Asn Val Tyr Ala Thr Lys Lys
        355                 360                 365
Met Ala Gln Asp Ala His Glu Ala Ile Arg Pro Thr Asp Val Thr Ile
    370                 375                 380
Thr Pro Glu Ser Ile Arg Ser Lys Leu Thr Glu Asp Gln Tyr Lys Leu
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385 390 395 400
Tyr Ser Leu Ile Trp Lys Arg Phe Val Ala Ser Gln Met Ile Ser Ala
405 410 415
Ile Tyr Asp Thr Leu Ala Ile Arg Ile Thr Thr Asn Lys Gly Ile Asp
420 425 430
Leu Arg Ala Thr Gly Ser Cys Leu Lys Phe Lys Gly Phe Leu Ala Val
435 440 445
Tyr Glu Glu Lys Arg Asp Glu Glu Gly Asp Glu Glu Glu Asn Ile His
450 455 460
Leu Pro Lys Leu Asn Glu Arg Asp Val Leu Thr Lys Glu Glu Leu Glu
465 470 475 480
Ala Glu Gln Ser His Thr Lys Pro Leu Pro Arg Phe Thr Glu Ala Ser
485 490 495
Leu Val Lys Glu Leu Glu Lys Ser Gly Ile Gly Arg Pro Ser Thr Tyr
500 505 510
Ala Thr Ile Met Asn Lys Ile Gln Ser Arg Glu Tyr Thr Leu Lys Glu
515 520 525
Gly Gln Arg Leu Arg Pro Thr Glu Leu Gly Lys Val Val Cys Gln Phe
530 535 540
Leu Glu Thr Asn Phe Pro Arg Ile Met Asp Ile Gly Phe Thr Ala Gly
545 550 555 560
Met Glu Asp Glu Leu Glu Leu Ile Ala Asp Asn Lys Lys Pro Trp Lys
565 570 575
Gln Leu Leu Gln Glu Phe Cys Glu Leu Phe Leu Pro Phe Val Val Thr
580 585 590
Ala Glu Lys Glu Ala Phe Ile Pro Arg Ile Val Thr Glu Ile Asp Cys
595 600 605
Pro Asn Val Ile Lys Gly Asn
610 615
<210>789
<211>348
<212>PRT
<213>Chlamydia trachomatis
<400>789
Val Phe Pro Gly Pro Asn Asp Ile Gly Ser Gln Glu Asn Val Lys Asp
1 5 10 15
Ile Cys Ser Leu Asp Pro Thr Asn Tyr Val Asn Ser Ser Cys Tyr Ser
20 25 30
Arg Ser Phe Pro His Gln Pro Ile Gly Thr Pro Leu Phe Phe Gly Lys
35 40 45
Lys Pro Val Leu Thr Tyr Gly Glu Val Ser Lys Leu Ile Ser Ser Lys
50 55 60
Thr Asp Pro Glu Pro Phe Ser Tyr Cys Arg Pro Thr Phe Leu Arg Ala
65 70 75 80
Ala Leu Asn Thr Leu Glu Phe Leu Ser Ser Pro Pro Ser Ser Asp Pro
85 90 95
Tyr Asp Asp Leu Leu Gln Leu Asn Lys Glu Gly Phe Leu Ala Gly Pro
100 105 110
Glu Glu Glu Lys Gln Ala Phe Phe Leu Arg Val Glu Arg Thr Leu Ala
115 120 125
Glu Ala Pro Val His Pro Thr Pro Phe Pro Ile Glu Phe Gln Lys Leu
130 135 140
Phe Asp Val Asn Pro Ser Phe Leu Glu Val Val Tyr Ser Asn Glu Ser
145 150 155 160
Leu Asp Ala Trp Glu Ala Gly Cys Thr Trp Ile Thr Asp Asn Arg Val
165 170 175
Ser Ile Gln Leu Arg Lys Gly Phe Gln Lys Ala Ser Phe Trp Phe Gly
180 185 190
Phe Phe Ser Lys Glu Glu Val Leu Ser His Glu Ala Val His Ala Val
195 200 205
Arg Met Lys Phe Tyr Glu Pro Ile Phe Glu Glu Val Leu Ala Tyr Ser

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    210                 215                 220
Thr Ser Lys His Phe Trp Arg Arg Phe Phe Gly Pro Leu Phe Arg Ser
225                 230                 235                 240
Ala Gly Glu Thr His Phe Phe Leu Phe Phe Val Leu Phe Gly Ala Phe
                245                 250                 255
Leu Phe Pro Trp Phe Pro Trp Ile Gly Leu Ser Cys Ile Leu Ala Pro
            260                 265                 270
Asn Met Phe Phe Phe Phe Arg Leu Phe Arg Thr Gln Ile Leu Phe Arg
        275                 280                 285
Lys Ala Lys Lys Lys Ile Arg Lys Leu Leu Gly Ile Glu Pro Leu Trp
    290                 295                 300
Val Leu Leu Arg Leu Thr Asp Arg Glu Ile Arg Leu Phe Ala Thr Gln
305                 310                 315                 320
Pro Leu Ala Val Ile Glu Asp Phe Ala Arg Lys Glu Lys Leu Lys Ser
                325                 330                 335
Val Arg Trp Arg Gln Ile Tyr Gln Ser Tyr Phe Thr
            340                 345
<210>790
<211>81
<212>PRT
<213>Chlamydia trachomatis
<400>790
Ile Asp Thr Leu Leu Ser Val Ile His Val His Pro Ala Ser Gln Ala
  1                 5                  10                  15
Ser Lys Leu Ser Leu Glu Tyr Thr Thr Ser Lys Lys Glu Gly Phe Thr
            20                  25                  30
Ser Lys Ser Phe Trp Asn Ser Met Gly Lys Gly Val Gly Cys Thr Gly
        35                  40                  45
Ala Ser Ala Asn Val Leu Ser Thr Arg Arg Lys Lys Ala Cys Phe Ser
    50                  55                  60
Ser Ser Gly Pro Ala Arg Asn Pro Ser Leu Phe Asn Cys Asn Lys Ser
65                  70                  75                  80
Ser

<210>791
<211>497
<212>PRT
<213>Chlamydia trachomatis
<400>791
Pro Pro Phe Gln Val Val Trp Gln Ile Gly Phe Lys Arg Glu Met Ile
  1                 5                  10                  15
Ile Leu Phe Thr Arg Val Ile Glu Ile Phe Cys Ala Ile Leu Gly Val
            20                  25                  30
Tyr Phe Phe His Ile His Ser Val Val Gly Gly Tyr Phe Val Leu Val
        35                  40                  45
Leu Met Ala Cys His Ser Ala Ile Phe Gly Pro Ala Lys Met Gly Ile
    50                  55                  60
Leu Pro Glu Met Leu Pro Ile Glu Glu Leu Ser Lys Ala Asn Gly Ala
65                  70                  75                  80
Met Thr Ala Ala Thr Tyr Ser Gly Ser Ile Leu Gly Ser Cys Leu Ala
                85                  90                  95
Pro Leu Met Val Asp Leu Thr Lys Asp Phe Val Thr Asn Ser Tyr Glu
            100                 105                 110
Leu Ser Ala Cys Phe Cys Val Val Ser Ser Val Leu Ser Leu Phe Ile
        115                 120                 125
Ala Leu Gly Ile Arg Ala Ser Asn Val Lys Asn Lys Gly Gln Lys Ile
    130                 135                 140
Ala Tyr Val Ser Phe Arg Asn Leu Trp Gln Val Phe Gln Glu Thr Arg
145                 150                 155                 160
Asn Ile Ala Tyr Leu Met Ile Ser Val Phe Leu Val Ala Phe Phe Leu
                165                 170                 175
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Phe Val Gly Ala Tyr Val Gln Leu Gln Ile Ile Pro Phe Val Glu Phe
            180                 185                 190
Thr Leu Gly Tyr Ser Lys His Tyr Gly Ala Tyr Leu Phe Pro Ile Val
        195                 200                 205
Ala Val Gly Met Gly Val Gly Ser Tyr Met Ala Gly Trp Ile Ser Gly
    210                 215                 220
Lys Asp Ile Lys Leu Gly Phe Ser Pro Leu Ala Ala Ile Gly Val Gly
225                 230                 235                 240
Leu Ser Met Met Val Leu Cys Leu Leu Ser Phe Ser Ile Thr Ala Val
                245                 250                 255
Leu Ile Leu Leu Phe Cys Leu Gly Leu Val Gly Gly Ile Tyr Gln Val
            260                 265                 270
Pro Leu His Ala Tyr Ile Gln Phe Val Ser Pro Glu His Lys Arg Gly
        275                 280                 285
Gln Val Leu Ala Leu Asn Asn Phe Leu Asp Phe Ser Gly Val Leu Leu
    290                 295                 300
Ala Ala Gly Phe Val Arg Leu Leu Gly Ala Gly Leu Arg Leu Thr Pro
305                 310                 315                 320
Asp Gln Ser Phe Leu Tyr Met Gly Ser Leu Val Val Cys Phe Ala Ile
                325                 330                 335
Leu Ser Leu Trp Met Leu Lys Glu His Val Tyr Arg Leu Leu Leu Thr
            340                 345                 350
Arg Val Leu Lys Arg Gln Leu Gly Thr Ser Phe Ser Ser Pro Lys Ala
        355                 360                 365
Glu Glu Val Trp Cys Phe Phe Val Pro Ala Thr Ser Tyr Lys Glu Thr
    370                 375                 380
Arg Arg Ile Leu Ala Leu Phe Pro Lys Thr Val Arg Ser Cys Val Phe
385                 390                 395                 400
Ile Leu Asp Lys Ala Leu Gln Pro Gly Trp Thr Ser Tyr Leu Ile Pro
                405                 410                 415
His Cys Val Pro Thr Ile Phe Ser Tyr Gly Val Glu Gly Gln Ala Phe
            420                 425                 430
Ala Gln Trp Ile Asp Arg Gln Val Val Glu Val Lys Ala Leu Leu Lys
        435                 440                 445
Arg Gln Pro Ser Leu Gly Val Val Cys Leu Gly Asn Gln Ala Gln Ser
    450                 455                 460
Gln Phe Phe Phe Ser Gln Leu Gln Ala Ser Gly Leu Ala Val Gln Ser
465                 470                 475                 480
Gly Thr Leu Val Gln Asp Ser Glu Leu Lys Tyr Ser Leu His Leu Ala
                485                 490                 495
Asn
```

<210>792
<211>744
<212>PRT
<213>Chlamydia trachomatis
<400>792

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Lys Lys Leu Ile Glu Ile Val Ile Tyr Asn Cys Lys Lys Met Cys Asn
  1               5                  10                  15
Asp Gln Cys Thr Glu Arg Ser Phe Pro Arg Asn Asn Thr His Glu Cys
             20                  25                  30
Lys Pro Met Asn Glu Leu Ser His Ser Gln Ser Thr Phe Ser Asn Tyr
         35                  40                  45
Pro Glu Val Leu Leu Ala Lys Leu Ala Gln Asp Leu Phe Ser Ile Asn
     50                  55                  60
Gln Thr Pro Met Thr Lys Arg Trp Ile Leu Val Pro Ser Ser Asp Thr
 65                  70                  75                  80
Asp His Trp Leu Arg Arg Glu Leu Val Lys Ala Ser Ser Asn His Ile
                 85                  90                  95
Phe Met Gly Thr His Ile Phe Ala Ser Phe Asp Ala Phe Val Lys Tyr
            100                 105                 110
```

```
Leu Phe Thr Gly Thr Arg Leu Val Asp Leu Ser Thr Pro Asp His Ile
            115                 120                 125
Thr Leu Pro Leu Thr Ile Tyr Asn Leu Leu Lys Glu Ser Ser Phe Asn
        130                 135                 140
Ser Ser Ser Glu Val Ser Tyr Ser His Leu Gln Lys Leu Ser Ser Ile
145                 150                 155                 160
Phe Lys Lys Phe Tyr Thr Phe Ser Gln Glu Pro Ser Thr Asn Asn Pro
                165                 170                 175
Tyr Tyr Lys Asn Leu Phe Ala Gln Leu Lys Asp Ser Tyr Thr Pro Leu
            180                 185                 190
Glu Thr Ile Phe Ser Ser Ile Leu Asp His Pro Pro Glu Tyr Pro Cys
            195                 200                 205
Ser Leu His Ile Phe Gly Tyr Pro Gln Leu Pro Gln His Val Ala Ser
        210                 215                 220
Phe Phe Val Ala Leu Gly Lys Tyr Phe Pro Val His Phe Tyr Cys Phe
225                 230                 235                 240
Ser Pro Ser Ala Ala Tyr Phe Gly Asp Leu Leu Ser Asp Lys Ala Met
                245                 250                 255
Ala Ala Leu Ser Pro Arg Ile Pro Glu Pro His Gln Glu Thr Trp Glu
            260                 265                 270
Lys Tyr Val Leu Thr Asp Arg Leu Ala Leu Leu Ala Asn Leu Ala His
            275                 280                 285
Lys Ser Gln Ser Leu Gln Asn Phe Phe Leu Asp Tyr Ser Val Pro Tyr
        290                 295                 300
Glu Glu Leu Phe Gln Pro Tyr Glu Lys Leu Ser Ser Leu His Ile Val
305                 310                 315                 320
Lys Asp Ser Phe Phe His Leu Gln Pro Ile Asp Gln Lys Leu Phe Ser
                325                 330                 335
Asn Ser Pro Gln Thr Ile Phe Val Arg Gln Ala Pro Ser Ala Ser Arg
            340                 345                 350
Glu Val His Gln Leu Phe Ser Leu Val Ser Gln Leu Leu His Ser Gly
            355                 360                 365
Val Pro Ala Gln Glu Ile Phe Ile Leu Ser Ser Asn Leu Ser Lys Tyr
        370                 375                 380
Glu Thr Leu Leu Arg Gly Ile Phe Glu Pro His Leu Pro Leu Tyr Leu
385                 390                 395                 400
Thr Lys Thr Glu Lys Thr Gln Thr Arg Thr Leu Lys Asn Lys Leu Leu
                405                 410                 415
Leu Val Val Thr Phe Leu Phe Ser Lys Gly Ser Leu Asn Asp Leu Leu
            420                 425                 430
Arg Ile Leu Ser His Pro Asp Leu Leu Ser Pro Leu Glu Thr Thr Lys
            435                 440                 445
Met Gly Phe Leu Thr His Lys Leu Thr His Tyr Trp Lys Ser Leu Ser
        450                 455                 460
Gln Lys Asp Ser Pro Leu Thr Gln Leu Ile His Arg Ile Leu Asp Glu
465                 470                 475                 480
Tyr Pro Phe Ile Asp Asp Thr Gly Ser Val Asn Glu Ala Glu Thr Trp
                485                 490                 495
Glu Val Val Val Pro Leu Leu His Thr Leu Gln Gln Val Thr Ala Ser
            500                 505                 510
Tyr Ile Glu Ser Lys Asp Lys Thr Tyr Glu Glu His Ser Arg Leu Ile
            515                 520                 525
Phe Ser Ala Leu Glu Asn Ile Phe Phe Leu Ser Thr Glu Glu Tyr Ala
        530                 535                 540
Leu Leu Val Ser Leu Ser Lys Thr Leu Gln Pro Phe Val Arg Ser Ser
545                 550                 555                 560
Cys Ser Leu Thr Ile Phe Ile Glu Phe Cys Leu Asp Phe Leu Ser His
                565                 570                 575
Ile Pro Gly His Ser Gln Leu Tyr Asn Gln Pro Gly Pro Phe Val Gly
            580                 585                 590
Ser Leu Asn Ser Leu Ser Leu Ile Pro Lys Gly Tyr Thr Phe Ile Leu
```

595 600 605
Gly Ala Asn Lys Lys Asp His Ser Leu Asp Thr Ser Phe Leu Ile Asp
610 615 620
Pro Ser Leu Ile Gln Glu Asp Phe Leu Phe Ser Ser Thr Glu Asp Glu
625 630 635 640
Asp Asn Leu His Phe Leu Gln Thr Ile Val Ser Thr Lys His Gln Leu
645 650 655
His Ile Ser Tyr Leu Ser Ser Ser Lys Asn Pro Ala Leu Pro Ser Ser
660 665 670
Ala Leu Gln Asn Ile Cys Trp Met Leu Cys Leu Phe Lys Lys Asn Ile
675 680 685
Phe Leu Gly Asn Phe Met Leu Lys Lys Thr Phe Leu Leu Asn Arg Cys
690 695 700
Ile Ser Leu Thr Arg Phe Thr Thr Gly Trp Leu Lys Ser Pro Arg Tyr
705 710 715 720
Lys Thr Arg Pro His Pro Cys Leu Ser Leu Ile Gln Leu Arg Arg Tyr
725 730 735
Leu His Thr Tyr Pro Tyr Asn Ile
740

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<213>Chlamydia trachomatis
<400>793
Leu Ser Leu Phe Ile Gln Glu Ser Ser Ile Thr Glu Leu Cys Phe Ala
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Lys His Leu Leu Asp Ala Val Pro Ile Gln Glu Glu His Leu Ser Gly
20 25 30
Lys Leu Tyr Ala Lys Glu Asn Phe Ser Ser Glu Pro Leu His Gln Ser
35 40 45
Tyr Gln Val Tyr Tyr Arg Met Ala Gln Val Ser Pro Leu Gln Asn Lys
50 55 60
Ala Pro Ser Leu Phe Lys Ser Asp Thr Thr Lys Thr Leu Pro Ser His
65 70 75 80
Leu Ser Leu Gln His Leu Ile Lys Ala Phe Lys Asp Pro Leu Asn Phe
85 90 95
Phe Leu Ser Thr Gln His Gly Phe Ser Phe His Pro Lys Ala Leu Phe
100 105 110
Ser Lys Ser Glu Lys Val Phe Pro Ser Pro His Asp Ala Lys Ala Phe
115 120 125
Trp Asn His Leu Leu Ser Ser Lys Thr Pro Leu Pro Thr Thr Asn Tyr
130 135 140
Leu Ser Ala Phe Thr Glu Ser Leu Tyr Thr Asp Val Gln Asp Ser Val
145 150 155 160
Ser Lys Arg Leu Glu Thr Leu Gln Lys Asp Pro Ala Thr Thr Pro Phe
165 170 175
Ser Val Val Phe Ser Asp Gln Leu Phe His Asp Pro Leu His Pro Asn
180 185 190
Asp Gln Gln Val Pro Pro Leu Leu Leu Ser Leu Pro Leu Lys Asn Ile
195 200 205
His Leu Gln Gly Thr Ile His Gly Val Cys Ser Lys Gly Val Tyr Leu
210 215 220
Phe Ser Met His Pro Gly Glu Ala Phe Lys Lys Thr Gln Lys Thr His
225 230 235 240
Gly Phe Pro Lys Asp Ala Phe Glu Leu Glu Ser Tyr Leu Glu Ser Tyr
245 250 255
Leu Ser Leu Ala Leu Leu Gln Ala Ser His Leu Leu Pro Lys Glu Ala
260 265 270
Thr Ile Leu Arg Val Thr Pro His Asp Ile Glu Pro Ile Leu Pro Pro
275 280 285
Phe Ser Ser Pro Glu Ser Tyr Leu Ile Arg Ala Ile His Leu Tyr Asp

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290 295 300
Leu Leu Gln Asn Gln Ala Val Pro Leu Pro Ser Ala Gln Ala Trp Glu
305 310 315 320
Tyr Ile Lys Lys Thr Asp Ser Ala Ser Gln Cys Ile Lys Lys Leu Leu
325 330 335
Asp Ser Glu Glu Asp Pro Leu Thr Ser Ser Phe Trp Trp Phe His Asn
340 345 350
Arg Asp Thr Glu Glu Ile Cys Ser Glu Leu Ser Asn Asp Val Leu Ser
355 360 365
Gln Leu Leu Ser Leu Phe Ile Asn Gln Asp Ser Gln Gln Asn
370 375 380

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<211>1026
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<400>794

Met Ser Ser Phe Asp Ile Phe Ser Pro Thr Ala Ser Val Ser Gly Lys
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Phe Phe Leu Glu Ala Ser Ala Gly Thr Gly Lys Thr Phe Thr Ile Glu
20 25 30
Gln Val Ile Leu Arg Ser Leu Leu Glu Gly Ser Ile Glu Gln Thr Lys
35 40 45
Asn Ile Leu Val Val Thr Phe Thr Asn Ala Ala Thr Asn Glu Leu Lys
50 55 60
Leu Arg Ile Gln Ala Ser Leu Lys Gln Ala Leu Ser Leu Phe Ser Gln
65 70 75 80
Ala Leu Ser His Pro Gly Thr Pro Leu Pro Pro Tyr Ile Ser Ser Ser
85 90 95
Glu Thr Lys Val Lys Gln Leu Tyr Met Lys Ile Arg Asn Ser Leu Ala
100 105 110
Thr Leu Asp Glu Met Asn Ile Phe Thr Ile His Gly Phe Cys Arg Phe
115 120 125
Thr Leu Glu Gln His Phe Pro Trp Ile Gln Pro Ile Gln Pro Ser Ser
130 135 140
Ile Phe Ser Glu Pro Gln Thr Ile Gln Gln Tyr Ile Leu Asp Tyr Leu
145 150 155 160
Arg Lys Asn Leu Trp Asp Thr Val Leu Ser Pro Lys Gln Tyr Ala Phe
165 170 175
Leu Ser Tyr His His Arg Ala Thr Thr Gln Gln Thr Arg His Leu Ile
180 185 190
Glu Arg Leu Leu Gln Asp Tyr Thr Ser Thr Pro Asn Leu Ala Leu Ser
195 200 205
Pro Leu Ser Ile Thr Leu Gln Lys Leu Lys Ala Trp Val Ser Cys Tyr
210 215 220
Gln His Leu Ala Pro Leu Ser Leu Glu Glu Met Gln Ala Phe Ser Leu
225 230 235 240
Arg Phe Lys Gln Ser Asp Leu Ser Ile Glu Arg Glu Leu Pro Ala Phe
245 250 255
Val Gln Gln Phe Glu Thr Asn Pro Tyr Ser Leu Asp Met Leu Phe Phe
260 265 270
Pro Gly Met Val Gln Lys Phe Gln Glu Glu Asn Arg Asn Lys Lys Lys
275 280 285
Leu Ser Ala Pro Ala Ser Pro Leu Asp Pro Phe Phe Gln Asp Trp Ile
290 295 300
Gln Leu Ala His Pro Phe Cys Gln Lys Glu Pro Ile Phe His Thr Leu
305 310 315 320
Leu Lys Ser Val Gln Gln His Leu Lys Thr His Cys Ala Gln Ser Tyr
325 330 335
Ser His Asp Glu Ser Ile Ala Thr Leu Glu Ser Leu Leu Asp His Asn
340 345 350
Asp Thr Val Val Ser Gln Leu Arg Lys Gln Phe Gln Leu Val Leu Ile

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        355                 360                 365
Asp Glu Phe Gln Asp Thr Asp Lys Arg Gln Xaa Gln Ile Phe Ser Lys
    370                 375                 380
Leu Phe Ala Ser Pro Asp Tyr Ser Gly Ser Leu Phe Leu Ile Gly Asp
385                 390                 395                 400
Pro Lys Gln Ser Ile Tyr Glu Trp Arg Asn Ala Asp Leu Pro Thr Tyr
                405                 410                 415
Leu Gln Ala Lys His Ser Phe Pro Lys Glu Ala Arg Leu Ile Leu Asp
            420                 425                 430
Thr Asn Tyr Arg Ser Thr Pro Xaa Leu Met Gln Gly Leu Asn His Leu
        435                 440                 445
Phe Ser Leu Pro Thr Pro Phe Leu Glu Thr Pro Gln Asn Ile Leu Tyr
    450                 455                 460
His Pro Leu His Ser Lys Gly Ser Ser Glu Ile Ser Tyr Ser Glu Phe
465                 470                 475                 480
Ser Pro Ile His Phe Phe Ser Ser Glu Asp Ile Gln Glu Glu Thr Leu
                485                 490                 495
Trp Ile Ser Lys Thr Ala Ser Tyr Leu Arg Ser Ala Tyr Ser Ile Pro
            500                 505                 510
Phe Gly Asn Met Ala Val Leu Val Gln Asp Tyr Pro Gln Ala Leu Lys
        515                 520                 525
Leu Ile Thr His Ser Thr Ile Pro Met Ala Tyr Cys Lys Glu Lys Arg
    530                 535                 540
Ile Phe Asp Arg Thr Glu Ser Pro Tyr Leu Leu Ile Leu Leu Leu Glu
545                 550                 555                 560
Ala Leu Leu Tyr Pro Glu Asn Gln Gln Lys Ile Gln Ala Ile Leu Met
                565                 570                 575
Ser Arg Leu Phe Gln Leu Ser Ser Thr Glu Ile His Gln His Leu Lys
            580                 585                 590
Thr Phe Ser Ser Leu Phe Phe Thr Leu Asn Arg His Leu Tyr His Tyr
        595                 600                 605
Ser Leu Leu Ala Thr Phe Tyr Lys Leu Met Gly Glu Asn Val Leu Ser
    610                 615                 620
Gln Thr Ile Gly Glu Thr Leu Leu Gln Thr Pro Leu Gly Asp Ile Ile
625                 630                 635                 640
Phe Gln Glu Leu Glu Ala Leu Cys Leu Tyr Leu Asp Lys Thr Thr Glu
                645                 650                 655
Asn Pro His His Lys Leu Leu His Leu Ile Asn Ile Leu Ile Thr Gly
            660                 665                 670
Lys Tyr Asp Glu Glu Leu Ser Phe Ser Ser Gln Ser Asn Asp Glu Asn
        675                 680                 685
Met Ile Lys Ile Thr Thr Val His Ser Ser Lys Gly Leu Glu Tyr Asp
    690                 695                 700
Val Val Phe Cys Ser Cys Leu Asn Lys Ala Lys Glu Lys Thr Pro Ser
705                 710                 715                 720
Val His Met Arg Glu Met Tyr Val Ala Cys Thr Arg Ala Lys Lys Phe
                725                 730                 735
Leu Phe Ile Pro Phe Ser Pro Ile Glu Lys Arg Ser Leu Ser Thr Lys
            740                 745                 750
Lys Leu Ser Ala Leu Ala Asn Tyr Ala Asn Val Thr Lys His His Ser
        755                 760                 765
Val Pro His Leu Val Glu Thr Leu Thr Ser Ser Ser Pro Glu Leu Phe
    770                 775                 780
Ser Ser Ser Phe Gln Pro Pro Glu Ser Ser Leu Thr Pro Asp Arg Glu
785                 790                 795                 800
Arg Leu Pro Gln Gln Thr Tyr Phe Ser Leu Pro His Leu Pro Ser Arg
                805                 810                 815
Thr Ile His Ser Phe Ser Ser Thr Val Glu Asn Leu His Phe Ser Glu
            820                 825                 830
Pro Ile Gln Glu Leu Ser Pro Ser Leu Leu Phe Pro Gly Gly Ser Leu
        835                 840                 845
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Thr Gly Thr Leu Ile His Lys Leu Leu Glu Ser Leu Ala Gly Asn Phe
    850                 855                 860
Ala Ala Cys Phe Glu Glu Ile Phe Asn Lys Ala Gln Thr Leu Leu Lys
865                 870                 875                 880
Asn Thr Pro Leu Glu Gly Tyr Glu Ser Ile Ile Ala Glu Lys Ile Tyr
                885                 890                 895
Thr Val Phe Ser Thr Thr Leu Pro Phe Ser Ser Gly Ser Phe Ala Leu
            900                 905                 910
Arg Asn Ile His Pro His Asn Ile Arg Val Glu Glu Thr Phe Leu Leu
        915                 920                 925
Gln Glu Glu Gly Glu Leu Trp Gln Gly Ile Val Asp Leu Phe Phe Glu
    930                 935                 940
His Lys Gly Arg Phe Phe Ile Ile Asp Trp Lys Thr Ser Phe Leu Gly
945                 950                 955                 960
Asp Glu Thr Ser Cys Tyr Ser Pro Asp Gln Leu His Leu Tyr Ile Gln
                965                 970                 975
Arg Gln Gly Leu Asp Arg Gln Glu Arg Leu Tyr Arg Lys Ala Ala Lys
            980                 985                 990
Arg Phe Leu His Gln Phe Asn Ser Ser Leu Gln Val Glu Met Ala Phe
        995                 1000                1005
Val Phe Ile Arg Gly Leu Asp Asp Lys Gly Asn Gly Phe Leu Gln Pro
    1010                1015                1020
Gly Arg
1025
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<400>795
Thr Pro Ser Asn Tyr Ser Gln Ile Lys Pro Lys Ile Ser Gly Arg Ser
  1               5                  10                  15
Leu Gly Leu Lys Ser Ile Gly Gly Asn Thr Lys Lys Ser Thr Val Glu
             20                  25                  30
Gln Ser Gly Ala Lys Asp Cys Ala Phe Ile Phe Lys Glu Gln Asp Pro
         35                  40                  45
Ser Leu Leu Gly Arg Thr Ser Leu Thr Val Ala Thr Arg Ser Pro Gly
     50                  55                  60
Gly Lys Thr Pro Ser Asn Pro Val Val Thr Arg Thr Ser Pro Thr Ser
 65                  70                  75                  80
Ile Val Phe Pro Ser Thr Lys Pro Lys Ser Leu Pro Leu Ser Ile Glu
                 85                  90                  95
Ala Ser Gly Phe Gln Ile Gly Ser Pro Arg Pro Gln Thr Ile Pro Arg
            100                 105                 110
Arg Ala Lys Ser Phe Cys Ser Asp Arg Asp Lys Glu Ser Ser Arg Ala
        115                 120                 125
Cys Lys Arg Cys Lys Ala Ser Cys Leu Ser Leu Ser Ala Lys Ala Asp
    130                 135                 140
Ala Gly Arg Leu Ala Thr Phe Leu Ala Asn Val Arg Ser
145                 150                 155
<210>796
<211>345
<212>PRT
<213>Chlamydia trachomatis
<400>796
Val Leu Leu Thr Val Leu Leu Arg Leu Met Asn Thr Leu Gly Pro Tyr
  1               5                  10                  15
His Lys Arg Val Arg Phe Ile Thr Tyr Leu Phe Val Ala Phe Gly Ile
             20                  25                  30
Ile Val Ser Trp Asn Leu Pro Arg Ser Ala Tyr Glu Ser Ile Gln Asp
         35                  40                  45
Thr Phe Val Arg Val Cys Ser Lys Phe Leu Pro Phe Arg Gln Gly Ser
```

Sheet 1 of 2

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     50                  55                  60
Asp Ser Gln Ala Leu Val Glu Glu Thr Gln Cys Phe Leu Leu Lys Glu
 65                  70                  75                  80
Lys Ile Arg Leu Leu Glu Glu Arg Ile Leu Ser Met Glu Glu Ala Lys
                 85                  90                  95
Gln Ser Pro Pro Leu Phe Ser Glu Ile Leu Ser Ser Tyr Phe Gln Ser
            100                 105                 110
Pro Ile Met Gly Arg Val Ile Phe Arg Asp Pro Ala His Trp Gly Ser
        115                 120                 125
Ser Cys Trp Ile Asn Ile Gly Lys Arg Gln Gly Val Lys Lys Asn Ser
    130                 135                 140
Pro Val Val Cys Gly Lys Val Val Val Gly Leu Val Asp Phe Val Gly
145                 150                 155                 160
Glu Ala Gln Ser Arg Val Arg Phe Ile Thr Asp Val Gly Ile Lys Pro
                165                 170                 175
Ser Val Met Ala Val Arg Gly Glu Ile Gln Thr Trp Val Val Lys Asp
            180                 185                 190
Gln Leu Arg Thr Leu Ala Arg Asn Val Ala Asn Leu Pro Ala Ser Ala
        195                 200                 205
Phe Ala Asp Ser Asp Lys Gln Glu Ala Leu His Leu Leu Gln Ala Leu
    210                 215                 220
Glu Asp Ser Leu Ser Leu Ser Glu Gln Asn Asp Phe Ala Leu Arg Gly
225                 230                 235                 240
Ile Val Cys Gly Arg Gly Asp Pro Ile Trp Lys Pro Glu Ala Ser Ile
                245                 250                 255
Leu Ser Gly Ser Asp Phe Gly Phe Val Asp Gly Lys Thr Ile Glu Val
            260                 265                 270
Gly Asp Val Leu Val Thr Thr Gly Leu Asp Gly Val Phe Pro Pro Gly
        275                 280                 285
Leu Leu Val Ala Thr Val Asn Glu Val Leu Pro Lys Ser Glu Gly Ser
    290                 295                 300
Cys Ser Leu Lys Ile Lys Ala Gln Ser Leu Ala Pro Asp Cys Ser Thr
305                 310                 315                 320
Val Asp Phe Leu Val Leu Pro Pro Met Asp Phe Asn Pro Asn Asp Arg
                325                 330                 335
Pro Asp Ile Phe Gly Leu Ile Trp Glu
            340                 345
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<210>797
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<212>PRT
<213>Chlamydia trachomatis
<400>797

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Arg Gly Phe Ile Val Ser Leu Phe Glu Gln Leu Pro Ser Phe Ser Pro
  1               5                  10                  15
Asp Ser Ile Leu Gly Leu Ala Gln Ala Phe Gln Glu Asp Pro Arg Glu
             20                  25                  30
Asp Lys Ile Asn Leu Leu Leu Gly Thr Tyr Glu Arg Glu Lys Lys Arg
         35                  40                  45
Tyr Gly Gly Phe Ser Ser Val Arg Lys Ala Gln Ser Val Phe Phe Asp
     50                  55                  60
Asp Glu Lys Asp Lys Asn Tyr Leu Pro Ile Lys Gly Ser Ser Thr Phe
 65                  70                  75                  80
Leu Glu Glu Met Ala Ala Leu Cys Phe Gly Glu Leu Asp Ala Asn Arg
                 85                  90                  95
Trp Val Gly Val Gln Ala Ile Gly Gly Thr Gly Ala Leu His Leu Gly
            100                 105                 110
Ala Ser Val Tyr Ala Asn Ala Ser Leu Ala Gly Lys Val Tyr Ile Pro
        115                 120                 125
Ser Gln Thr Trp Gly Asn His Ser Arg Ile Phe Ser His Gln Gly Leu
    130                 135                 140
Ala Leu Glu Tyr Tyr Pro Tyr Tyr Asp Gln Glu Thr Lys Glu Leu Asp
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145                 150                 155                 160
Leu Gln Gly Leu Lys Ala Val Leu Arg Ser Ala Pro Glu Thr Ser Leu
                165                 170                 175
Val Leu Leu His Cys Cys Cys His Asn Pro Thr Gly Lys Asp Ile Pro
            180                 185                 190
Leu Ser Glu Trp Pro Glu Ile Ile Thr Ile Ile Lys Glu Arg Asp Leu
        195                 200                 205
Ile Pro Phe Phe Asp Met Ala Tyr Leu Gly Phe Ala Ser Gly Ile Glu
    210                 215                 220
Glu Asp Arg Arg Pro Val Gln Leu Cys Ile Glu Ala Gly Val Thr Thr
225                 230                 235                 240
Phe Val Ala Gly Ser Ala Ser Lys Asn Phe Ser Leu Tyr Gly Ser Arg
                245                 250                 255
Val Gly Phe Phe Gly Ala Ile His Gln Asp Lys Gln Asp Leu Asn Arg
            260                 265                 270
Ile Leu Ser Phe Leu Glu Glu Gln Ile Arg Gly Glu Tyr Ser Ser Pro
        275                 280                 285
Ala Arg Glu Gly Val Ala Ile Val Thr Ser Ile Leu Ser Asn Pro Tyr
    290                 295                 300
Leu Arg Gln Glu Trp Glu Leu Glu Leu Asn Gly Ile Arg Gln Ser Leu
305                 310                 315                 320
Glu Glu Ile Arg Ser Ser Phe Val Ile Ala Met Arg Asn Val Ala Gly
                325                 330                 335
His Ser Phe Asp Phe Ile Ala Ser Gln Lys Gly Phe Phe Gly Tyr Pro
            340                 345                 350
Gly Phe Ser Lys Glu Gln Val Leu Phe Leu Arg Glu Glu Leu Gly Ile
        355                 360                 365
Tyr Thr Thr Ala Ala Glu Asp Ser Ile
    370                 375
<210>798
<211>134
<212>PRT
<213>Chlamydia trachomatis
<400>798
Val Pro Ser Asn Lys Leu Ile Leu Ser Ser Arg Gly Ser Ser Trp Lys
  1                 5                  10                  15
Ala Cys Ala Lys Pro Arg Ile Glu Ser Gly Glu Lys Glu Gly Asn Cys
             20                  25                  30
Ser Lys Arg Leu Thr Ile Lys Pro Leu Tyr Ser Ala Leu Leu Leu Thr
         35                  40                  45
Val Phe Phe Ser Ser Lys Met Thr Ala Cys Cys Pro Lys Ser Cys Lys
     50                  55                  60
His Asp Asn Leu Val Ser Ser Leu Gly Val Leu Ala Gln Leu Val Glu
 65                  70                  75                  80
Arg Asn Asn Gly Ile Val Glu Val Ser Gly Ser Ile Pro Leu Cys Ser
                 85                  90                  95
Asn Phe Cys Leu Ile Pro Tyr Arg Arg Asn Phe Leu Asp Leu Val Leu
            100                 105                 110
Leu Ala Leu Lys Gln Tyr Ser Phe Ser Asn Ser Phe Ser Asn His Phe
        115                 120                 125
Leu Gly Gln Phe Arg Phe
    130
<210>799
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<213>Chlamydia trachomatis
<400>799
Cys Asn Ile Ala Leu Phe Cys Tyr Ser Ala Tyr Ile Ser Gly Leu Lys
  1                 5                  10                  15
Arg Gly Ala Ile Val Asp Tyr Leu Glu Asn Leu Gln Ser Leu Ile Glu
             20                  25                  30
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Sequence Listing

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Asn His Pro Ser Asp Phe Phe Ser Leu Trp Glu Glu Tyr Cys Phe Asn
        35                  40                  45
Asp Val Val Lys Gly Asp Glu Leu Val Val Leu Leu Glu Lys Ile Lys
    50                  55                  60
Gly Ser Thr Ile Ala Pro Ala Phe Gly Lys Ile Ala Glu Ser Val Ile
65                  70                  75                  80
Pro Leu Trp Glu Gln Leu Pro Glu Gly Glu Glu Lys Asp Lys Val Leu
                85                  90                  95
Ser Leu Val Phe Asp Val Gln Thr Thr Asn Ser Lys Asn Leu Leu Glu
            100                 105                 110
Ile Ala Leu Gln Gln Val Lys Lys Tyr Glu Asp Ser Ala Asn Tyr Lys
        115                 120                 125
Glu Ala Leu Arg Ile Val Gly Leu Arg Asp Gly Ile Thr Phe Ser His
    130                 135                 140
Cys Leu Gly Arg Phe Ala Leu Leu Met His Leu Ser Glu Gly Asn Phe
145                 150                 155                 160
Val Phe His Gln Gly Gly Trp Gly Val Gly Glu Ile Met Gly Val Ser
                165                 170                 175
Phe Leu Gln Gln Lys Val Leu Val Glu Phe Glu Gly Val Leu Thr Ala
            180                 185                 190
Lys Asp Ile Ser Phe Glu Thr Ala Phe Arg Met Leu Val Pro Leu Arg
        195                 200                 205
Lys Asp His Phe Leu Ala Arg Arg Phe Gly Asp Pro Asp Ala Phe Glu
    210                 215                 220
Ala Phe Ala Arg Lys Glu Pro Val Ala Ala Ile Glu Cys Leu Leu Lys
225                 230                 235                 240
Asp Leu Gly Pro Lys Asn Ala Lys Glu Ile Arg Asn Glu Leu Val Glu
                245                 250                 255
Leu Val Ile Pro Glu Glu Asp Trp Ser Arg Trp Trp Gln Ser Ala Lys
            260                 265                 270
Ile Lys Met Lys Lys Asp Ala Arg Ile Leu Ala Pro Ala Ser Ser Lys
        275                 280                 285
Asp Pro Tyr Val Phe Asp Pro Lys Gly Phe Ser Phe Val Ser Gln Leu
    290                 295                 300
Gln Ala Ser Leu Ser Gly Ser Asn Asp Ala Asn Lys Lys Ile Thr Ser
305                 310                 315                 320
Cys Tyr Ala Phe Val Arg Asp Leu Gly Ser Glu Leu Lys Asp Glu Ser
                325                 330                 335
Asn Arg Gln Ser Val Ile Lys Glu Leu Lys Ala Leu Asp Leu Pro Ala
            340                 345                 350
Asp Ser Ala Leu Leu Ile Gln Arg Ala Met Leu Leu Ser Glu Phe Leu
        355                 360                 365
Gly Glu Lys Ala Pro Glu Leu Glu Tyr Glu Asn Ile Ala Lys Leu Ser
    370                 375                 380
Glu Asp Gln Leu Phe Asp Ile Val Asn Asn Ile Glu Ile Leu Ser Leu
385                 390                 395                 400
Gln Lys Ser Phe Leu Ala Leu Ile His Ser Cys Ser Pro Val Trp Val
                405                 410                 415
Pro Val Tyr Thr Lys Leu Phe Leu Thr Thr Ser Thr Ser Met Leu Arg
            420                 425                 430
Glu Gln Val Phe Lys Val Leu Asn Ala Asp Lys Glu Ala Arg Glu Asn
        435                 440                 445
Ile Leu Lys Lys Val Phe Ala Met Ile Glu Gln Pro Leu Leu Tyr Pro
    450                 455                 460
Glu Leu Phe Val Trp Leu Phe Ala Arg Val Val Asp Gly Glu Asp Gly
465                 470                 475                 480
Leu Phe Ala Glu Ser Asp Lys Lys Glu Ile Glu Arg Gln Met Leu Ala
                485                 490                 495
Ser Ala Leu Glu Leu Met His Lys Val Ala Thr Thr Pro Gln Lys Asp
            500                 505                 510
Leu Gly Lys Lys Leu Tyr Ser Phe Leu Val Gly Gln Arg Phe Leu Val
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        515                 520                 525
Ile Arg Gln Ile Ile Asp Gln Ala Ser Ile Glu Tyr Leu Lys Glu Phe
    530                 535                 540
Val Leu Leu Ser Ser Lys Cys Pro Gln Phe Thr Gln Gly Asp Leu Gly
545                 550                 555                 560
Val Leu Arg Ser Leu Ala Glu Val Val Gln Pro Ala Leu Lys Arg Gly
                565                 570                 575
Thr Leu Glu Glu Glu Glu Asn Ile Leu Trp Thr Thr Ser Asp Ser Phe
            580                 585                 590
Thr Arg Met Lys Asn Lys Leu Gln Ser Leu Val Gly Lys Glu Met Val
        595                 600                 605
Glu Asn Ala Lys Glu Ile Glu Asp Ala Arg Ala Leu Gly Asp Leu Arg
    610                 615                 620
Glu Asn Ser Glu Tyr Lys Phe Ala Ser Glu Arg Arg Ala Arg Leu Gln
625                 630                 635                 640
Glu Glu Ile Arg Val Leu Ser Glu Glu Ile Asn Arg Ala Lys Ile Leu
                645                 650                 655
Thr Lys Asp Ala Val Phe Thr Asp Ser Val Gly Val Gly Cys Lys Val
            660                 665                 670
Val Leu Glu Ser Asp Gln Gly Asp Lys Val Cys Tyr Thr Ile Leu Gly
        675                 680                 685
Pro Trp Asp Ala Asn Pro Asp Glu Lys Ile Leu Ser Leu Lys Ser Lys
    690                 695                 700
Leu Ala Gln Glu Met Val Gly Lys Ala Val Gly Glu Thr Val Leu Phe
705                 710                 715                 720
Gln Gly Lys Lys His Lys Ile Lys Glu Ile Ser Ser Ile Trp Asp
                725                 730                 735
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<213>Chlamydia trachomatis
<400>800
Asn Ile Glu Ile Phe Val Met Lys Asn Asn Ser Ala Gln Lys Ile Ile
  1               5                  10                  15
Asp Ser Ile Lys Gln Ile Leu Ser Ile Tyr Lys Ile Asp Phe Asp Pro
            20                  25                  30
Ser Phe Gly Ala Thr Leu Thr Asp Asp Asn Asp Leu Asp Tyr Gln Met
        35                  40                  45
Leu Ile Glu Lys Thr Gln Glu Lys Ile Gln Glu Leu Asp Lys Arg Ser
    50                  55                  60
Gln Glu Ile Leu Gln Gln Thr Gly Met Thr Arg Glu Gln Met Glu Val
65                  70                  75                  80
Phe Ala Asn Asn Pro Asp Asn Phe Ser Pro Glu Glu Trp Arg Ala Leu
                85                  90                  95
Glu Asn Ile Arg Ser Ser Cys Asn Glu Tyr Lys Lys Glu Thr Glu Glu
            100                 105                 110
Leu Ile Lys Glu Val Thr Asn Asp Ile Gly His Ser Ser His Lys Ser
        115                 120                 125
Pro Thr Pro Lys Lys Thr Lys Ser Ser Ser Gln Lys Lys Ser Lys Lys
    130                 135                 140
Lys Asn Trp Ile Pro Leu
145                 150
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<213>Chlamydia trachomatis
<400>801
Met Lys Ile Val Val Ser Arg Gly Leu Asp Leu Ser Leu Lys Gly Ala
  1               5                  10                  15
Pro Lys Glu Ser Gly Phe Cys Gly Lys Val Asp Pro Thr Tyr Val Ser
            20                  25                  30
```

```
Val Asp Leu Arg Pro Phe Ala Pro Leu Pro Leu Glu Val Lys Val Thr
          35                  40                  45
Pro Gly Asp Gln Val Thr Ala Gly Ser Pro Leu Ala Glu Tyr Lys Leu
      50                  55                  60
Phe Ser Gly Val Phe Ile Thr Ser Pro Val Asp Gly Glu Val Val Glu
 65                  70                  75                  80
Ile Arg Arg Gly Asn Lys Arg Ala Leu Leu Glu Ile Val Ile Lys Lys
                 85                  90                  95
Lys Pro Gly Ile Ser Gln Thr Lys Phe Ser Tyr Asp Leu Gln Ser Leu
            100                 105                 110
Thr Gln Lys Asp Leu Leu Glu Val Phe Lys Lys Glu Gly Leu Phe Ala
        115                 120                 125
Leu Phe Lys Gln Arg Pro Phe Asp Ile Pro Ala Leu Pro Thr Gln Ser
    130                 135                 140
Pro Arg Asp Val Phe Ile Asn Leu Ala Asp Asn Arg Pro Phe Thr Pro
145                 150                 155                 160
Ser Val Glu Lys His Leu Ser Leu Phe Ser Ser Lys Glu Asp Gly Tyr
                165                 170                 175
Tyr Ile Phe Val Val Gly Val Gln Ala Ile Ala Lys Leu Phe Gly Leu
            180                 185                 190
Lys Pro His Ile Ile Ser Thr Asp Arg Leu Thr Leu Pro Thr Gln Asp
        195                 200                 205
Leu Val Ser Ile Ala His Leu His Thr Ile Asp Gly Pro Phe Pro Ser
    210                 215                 220
Gly Ser Pro Ser Thr His Ile His His Ile Ala Arg Ile Arg Asn Glu
225                 230                 235                 240
Arg Asp Val Val Phe Thr Ile Ser Phe Gln Glu Val Leu Ser Ile Gly
                245                 250                 255
His Leu Phe Leu Lys Gly Phe Val Leu Gly Gln Gln Ile Val Ala Leu
            260                 265                 270
Ala Gly Ser Ala Leu Pro Pro Ser Gln Arg Lys Tyr Leu Ile Thr Ala
        275                 280                 285
Lys Gly Ala Ser Phe Ser Asp Leu Leu Pro Lys Asp Ile Phe Ser Ser
    290                 295                 300
Asp Glu Ile Thr Leu Ile Ser Gly Asp Pro Leu Thr Gly Arg Leu Cys
305                 310                 315                 320
Lys Lys Glu Glu Asn Pro Cys Leu Gly Met Arg Asp His Thr Ile Thr
                325                 330                 335
Leu Leu Pro Asn Pro Lys Thr Arg Glu Ser Phe Ser Phe Leu Arg Leu
            340                 345                 350
Gly Trp Asn Lys Leu Thr Val Thr Arg Thr Tyr Leu Ser Gly Phe Phe
        355                 360                 365
Lys Arg Lys Arg Val Phe Met Asp Met Asp Thr Asn Met His Gly Glu
    370                 375                 380
Lys Arg Pro Ile Ile Asp Ala Glu Ile Tyr Glu Arg Val Ser Ala Ile
385                 390                 395                 400
Pro Val Pro Val Ala Leu Ile Ile Lys Ala Leu Glu Thr Gln Asn Phe
                405                 410                 415
Glu Glu Ala Cys Arg Leu Gly Leu Leu Glu Val Ala Pro Glu Asp Phe
            420                 425                 430
Ala Leu Pro Thr Phe Ile Asp Pro Ser Lys Thr Glu Met Phe Ser Ile
        435                 440                 445
Val Lys Glu Ser Leu Leu Arg Thr Gln Lys Arg Met Trp
    450                 455                 460
<210>802
<211>342
<212>PRT
<213>Chlamydia trachomatis
<400>802
Val Tyr Asn Phe Met Thr Arg Leu Pro Leu Leu Lys Arg Pro Arg Arg
  1               5                  10                  15
```

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Asn Arg Lys Ser Ala Ala Val Arg Ser Ile Ile Gln Glu Thr Gln Leu
                20                  25                  30
Cys Ser Ser Asp Leu Ile Trp Pro Ile Phe Leu Lys Asp Gly Ser Gly
            35                  40                  45
Ile Arg Glu Glu Ile Glu Ser Met Pro Gly Val Tyr Arg Trp Ser Leu
        50                  55                  60
Asp Met Val Ser Lys Glu Leu Glu Arg Leu Cys Thr Ile Gly Leu Lys
65                  70                  75                  80
Ala Val Ile Leu Phe Pro Val Ile Asp Ala Asn Lys Lys Glu Gln Phe
                85                  90                  95
Gly Ser Tyr Ala Ser His Pro Tyr Asn Ile Val Cys Lys Gly Ile Gln
            100                 105                 110
Ala Ile Lys Lys Ser Phe Pro Glu Leu Cys Val Ile Ser Asp Ile Ala
        115                 120                 125
Leu Asp Pro Phe Thr Thr Ser Gly His Asp Gly Ile Phe His Asn Asn
    130                 135                 140
Tyr Val Ile Asn Asp Glu Ser Val Arg Val Tyr Gly Gly Ile Ala Val
145                 150                 155                 160
Met His Ala Glu Met Gly Ala Asp Ile Val Ala Pro Ser Asp Met Met
                165                 170                 175
Asp Gly Arg Val Lys His Ile Arg Glu Gln Met Asp Gln Met Gly Phe
            180                 185                 190
Val Asn Thr Gly Ile Leu Ser Tyr Ser Ala Lys Tyr Ala Ser Ala Leu
        195                 200                 205
Tyr Gly Pro Phe Arg Asp Ala Leu Ser Ser His Leu Gln Ser Gly Asp
    210                 215                 220
Lys Arg Thr Tyr Gln Met Asp Pro Ala Asn Val Gln Glu Ala Leu Leu
225                 230                 235                 240
Glu Cys Gln Leu Asp Glu Glu Glu Gly Ala Asp Met Val Met Ile Lys
                245                 250                 255
Pro Ala Gly Phe Tyr Leu Asp Val Ile Val Lys Ala Arg Glu Asn Thr
            260                 265                 270
His Leu Pro Val Val Ala Tyr Gln Val Ser Gly Glu Phe Ser Met Ile
        275                 280                 285
Met Ala Ala Cys Leu His Gly Trp Leu Asn Lys Glu Ser Val Ile Lys
    290                 295                 300
Glu Ser Leu Leu Ala Ile Lys Arg Ala Gly Ala Thr Ala Ile Ile Ser
305                 310                 315                 320
Tyr Ala Thr Pro Trp Val Leu Glu Trp Leu Ala Lys Asp Ala Leu Pro
                325                 330                 335
Phe Glu Arg Ser Val Leu
            340
<210>803
<211>238
<212>PRT
<213>Chlamydia trachomatis
<400>803
Ala Asn Leu Leu Tyr Arg Ser Phe Leu Met Leu Ser Lys Glu Gly Gly
  1                 5                  10                  15
Phe Ser Glu Glu Gln Arg Ala Arg Leu Ser His Phe Val Thr Asn Leu
            20                  25                  30
Asp Ser Pro Ile Phe Ala Leu Lys Asn Leu Pro Glu Val Val Lys Gly
        35                  40                  45
Ala Leu Phe Ser Lys Tyr Ser Arg Ser Thr Leu Gly Leu Arg Thr Leu
    50                  55                  60
Leu Leu Lys Glu Phe Leu Asp Gly Glu Gly Gly Asn Phe Leu Asp Asp
65                  70                  75                  80
Asp Gln Gln Asp Cys Glu Leu Gly Ile Gln Lys Ala Val Asp Phe Tyr
                85                  90                  95
Arg Arg Val Leu Asp Asn Phe Gly Asp Asp Ser Val Gly Glu Leu Gly
            100                 105                 110
```

Gly Ala His Leu Ala Leu Glu Gln Val Ser Met Leu Ala Ala Lys Ile
115 120 125
Leu Glu Asp Ala Arg Ile Gly Gly Ser Pro Leu Glu Lys Ser Ser Arg
130 135 140
Tyr Val Tyr Phe Asp Gln Lys Val Asn Gly Glu Tyr Leu Tyr Tyr Arg
145 150 155 160
Asp Pro Ile Leu Met Thr Ser Ala Phe Lys Asp Val Phe Leu Asp Thr
165 170 175
Cys Asp Phe Leu Phe Asn Thr Tyr Ser Asp Leu Ile Pro Gln Val Arg
180 185 190
Ser His Phe Glu Lys Leu Tyr Pro Lys Asp Pro Glu Val Ser Gln Ser
195 200 205
Ala Tyr Thr Val Ser Leu Arg Ala Lys Val Leu Asp Cys Leu Arg Gly
210 215 220
Leu Leu Pro Ala Ala Thr Leu Thr Asn Leu Gly Phe Phe Trp
225 230 235
<210>804
<211>304
<212>PRT
<213>Chlamydia trachomatis
<400>804
Gly Phe Phe Gly Asn Gly Arg Phe Trp Gln Asn Leu Leu His Arg Leu
1 5 10 15
Gln Asp Asn Ser Leu Val Glu Val Arg Asn Ile Gly Glu Gln Ser Leu
20 25 30
Thr Glu Leu Met Lys Ile Ile Pro Ser Phe Val Ser Arg Ala Glu Ser
35 40 45
His His Tyr His His Gln Ala Met Val Asp Tyr Arg Arg Ala Leu Lys
50 55 60
Glu Gln Leu Lys Ser Phe Ala His Arg Tyr Gly Glu Glu Arg Glu Ile
65 70 75 80
Ser Lys Glu Ala Gly Val Lys Leu Val Tyr Gly Asp Pro Asp Gly Leu
85 90 95
Tyr Lys Ile Ala Ala Ala Tyr Met Phe Pro Tyr Ser Glu His Thr Tyr
100 105 110
Ala Glu Leu Leu Asp Ile Cys Arg Asn Ile Pro Asn Glu Asp Leu Met
115 120 125
Arg Ile Leu Glu Ser Gly Ala Ser Phe Arg Glu Asn Arg Arg His Lys
130 135 140
Ser Pro Arg Gly Leu Glu Cys Ala Glu Phe Ala Phe Asp Ile Thr Ala
145 150 155 160
Asp Phe Gly Ala Tyr Arg Asp Leu Gln Arg His Arg Ile Leu Thr Gln
165 170 175
Glu Arg Gln Leu Leu Thr Lys Lys Leu Gly Tyr Thr Met Pro Ser Gln
180 185 190
Leu Ile Asp Thr Pro Met Glu Ala Pro Phe Arg Gly Ala Met Glu Lys
195 200 205
Ala Asp Gln Ala Tyr Arg Leu Ile Ala Glu Glu Phe Pro Glu Glu Ala
210 215 220
Gln Tyr Val Val Pro Leu Ala Tyr Asn Ile Arg Trp Leu Phe His Ile
225 230 235 240
Asn Ala Arg Gly Leu Gln Trp Leu Cys Glu Leu Arg Ser Gln Pro Gln
245 250 255
Gly His Glu Ser Tyr Arg Lys Ile Ala Ile Asp Met Ala Arg Glu Val
260 265 270
Ile Gln Phe His Pro Ala Tyr Glu Leu Phe Leu Lys Phe Val Asp Tyr
275 280 285
Ser Glu Thr Asp Leu Gly Arg Leu Gln Gln Glu Ser Arg Lys Lys Ser
290 295 300
<210>805
<211>86

<212>PRT
<213>Chlamydia trachomatis
<400>805
Glu Lys Met Lys Thr Leu Ile Asp Asn Asn Ile Val Arg Phe Lys Asn
1 5 10 15
Ile Ser Lys Thr Lys Gln Gly Ile Phe Val Asn Phe Gln Val Lys Gly
20 25 30
Glu Arg Gly Gly Ala Ser Phe Thr Ala Ser Ile Ala Val Asp Ile Asp
35 40 45
Ala Ala Asp Val Ser Ala Gly Asp Ser Leu Glu Thr Ile Ile Glu Arg
50 55 60
Cys Ala Leu Ile Gly Ile Arg Glu Phe Gln Lys Cys Glu Phe Gln Phe
65 70 75 80
Asp Gly Ile Ile Cys Leu
85
<210>806
<211>227
<212>PRT
<213>Chlamydia trachomatis
<400>806
Met Ala Gly Pro Lys His Val Leu Leu Val Ser Glu His Trp Asp Leu
1 5 10 15
Phe Phe Gln Thr Lys Glu Leu Leu Asn Pro Glu Glu Tyr Arg Cys Thr
20 25 30
Ile Gly Gln Gln Tyr Lys Gln Glu Leu Ser Ala Asp Leu Val Val Cys
35 40 45
Glu Tyr Ser Leu Leu Pro Arg Glu Ile Arg Ser Pro Lys Ser Leu Glu
50 55 60
Gly Ser Phe Val Leu Val Leu Leu Asp Phe Phe Asp Glu Glu Thr Ser
65 70 75 80
Val Asp Leu Leu Asp Arg Gly Phe Trp Tyr Leu Ile Arg Pro Ile Thr
85 90 95
Pro Arg Ile Leu Lys Ser Ala Ile Ser Leu Phe Leu Ser Gln His Ser
100 105 110
Leu His Ser Val Pro Glu Ser Ile Arg Phe Gly Pro Asn Val Phe Tyr
115 120 125
Val Leu Lys Leu Thr Val Glu Thr Pro Glu Gly Ser Val His Leu Thr
130 135 140
Pro Ser Glu Ser Gly Ile Leu Lys Arg Leu Leu Ile Asn Lys Gly Gln
145 150 155 160
Leu Cys Leu Arg Lys His Leu Leu Glu Glu Ile Lys Asn His Ala Lys
165 170 175
Ala Ile Val Ala Arg Asn Val Asp Val His Ile Ala Ser Leu Arg Lys
180 185 190
Lys Leu Gly Ala Tyr Gly Ser Arg Ile Val Thr Leu Arg Gly Val Gly
195 200 205
Tyr Leu Phe Ser Asp Asp Gly Asp Lys Lys Phe Ser Gln Gln Asp Thr
210 215 220
Lys Leu Ser
225
<210>807
<211>246
<212>PRT
<213>Chlamydia trachomatis
<400>807
Ile Pro Ser Tyr Ala Cys Ile Arg Ser Leu Val Met Val Leu Ser Ala
1 5 10 15
Ser Leu Phe Ser Pro Glu Glu Phe Leu Tyr Pro Glu Ile Val Ser Gln
20 25 30
Ala Glu Phe Val Trp Ser Ile Leu Thr Leu Leu Glu Glu Lys Leu Ala
35 40 45

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```
Ser His Thr Phe Ser Gly Ile His Gly His Leu Glu Glu Gly Val Tyr
     50                  55                  60
Leu Lys Asn Lys Glu Thr Ile Glu Ile Gln Glu Gly Ala Tyr Val Glu
 65                  70                  75                  80
Ser Gly Ala Tyr Ile Cys Gly Pro Cys Ile Ile Gly Pro Tyr Thr Gln
                 85                  90                  95
Val Arg His Gly Ala Tyr Ile Arg Gly Gly Val Ile Thr Ser Ser His
            100                 105                 110
Cys Val Ile Gly His Cys Ser Glu Ile Lys Asn Ser Tyr Leu Gly His
        115                 120                 125
His Ala Lys Ala Ala His Phe Ala Tyr Val Gly Asp Ser Val Phe Gly
    130                 135                 140
Ser Arg Val Asn Leu Gly Ala Gly Val Arg Cys Ala Asn Phe Arg Leu
145                 150                 155                 160
Asp Gly Lys Thr Ile Phe Phe His His Ser Gly Glu Arg Tyr Asp Thr
                165                 170                 175
Lys Arg Lys Lys Leu Gly Ala Phe Leu Gly Arg Gly Val Ser Val Gly
            180                 185                 190
Cys Asn Thr Val Leu Asn Pro Gly Cys Tyr Val Ala Ser Ala Thr Lys
        195                 200                 205
Ile Leu Pro Lys Ser Asn His Leu Leu Arg Asn Asn Leu Cys Gln Thr
    210                 215                 220
Lys Val Asp Glu Lys Lys Lys Ala Val Ala Trp Ile Trp Ile Ile Ser
225                 230                 235                 240
Ala Phe Ile Asp Arg Lys
                245
<210>808
<211>129
<212>PRT
<213>Chlamydia trachomatis
<400>808
Leu Asp Met Asp Tyr Phe Ser Val Tyr Arg Ser Lys Val Glu Lys Lys
  1               5                  10                  15
Leu Arg Asp Ser Leu Gly Asp Phe Gly Asn Thr Gln Gly Gly Leu Arg
             20                  25                  30
Asp Pro Ile Glu Tyr Ala Leu Leu Gly Gly Gly Lys Arg Val Arg Pro
         35                  40                  45
Leu Leu Val Gly Leu Phe Ala Glu Gly Ile His Lys Glu Arg Asp Val
     50                  55                  60
Leu Asp Thr Ala Ile Ala Ile Glu Tyr Ile His Thr Ser Thr Leu Ile
 65                  70                  75                  80
Ala Asp Asp Leu Pro Cys Met Asp Asp Asp Asp Met Arg Arg Gly Lys
                 85                  90                  95
Leu Arg Phe Thr Lys Leu Leu Met Lys Leu Arg Leu Ser Trp Leu Arg
            100                 105                 110
Met Leu Leu Phe Gln Leu Leu Met His Glu Phe Val Arg Met Gln Lys
        115                 120                 125
Arg

<210>809
<211>199
<212>PRT
<213>Chlamydia trachomatis
<400>809
Arg Gln Ala Ser Val His Lys Ala Phe Asp Glu Ala Ser Ala Leu Leu
  1               5                  10                  15
Ala Ser Tyr Ala Leu Ile Pro Ala Ala Tyr Ala Arg Ile Arg Lys Asn
             20                  25                  30
Ala Lys Ala Leu Lys Ala Val Val Ser Cys Glu Gln Asp Val Glu Glu
         35                  40                  45
Ala Tyr Glu Asp Ile Leu Glu Leu Ile Glu Leu Arg Phe Gly Val Gly
```

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Sequence Listing

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     50                  55                  60
Gly Ile Leu Gly Gly Gln Tyr Glu Asp Val Phe Phe His Asp Phe Ser
 65                  70                  75                  80
Lys Glu Asn Val Leu Gly Ile Ile Lys Lys Lys Thr Gly Ala Leu Phe
                85                  90                  95
Glu Ile Ala Cys Val Ser Gly Trp Leu Phe Gly Gly Gly Glu Arg Glu
            100                 105                 110
Ser Ser Thr Leu Val Ala Glu Phe Ala Glu His Phe Gly Leu Leu Phe
        115                 120                 125
Gln Ile Arg Asp Asp Leu Ala Asp Leu Ser Gln Asp Asp Gln Glu Glu
    130                 135                 140
Lys His Met Asn Tyr Ala Leu Leu Phe Gly Glu Val Ala Ala Lys Glu
145                 150                 155                 160
Leu Leu Asp His Ser Phe Glu Ser Cys Ile Lys Asn Leu His Leu Leu
                165                 170                 175
Gln Glu Arg Gly Leu Glu Cys Ser Glu Pro Leu Glu Met Leu Cys Lys
            180                 185                 190
Asn Val Phe Cys Gly Trp Lys
        195
<210>810
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>810
Lys Ser Pro Pro Ile Ala Gly Glu Gly Ile Arg Val Phe Gly Ala Ala
  1                 5                  10                  15
Arg Asp Val Val Gln Lys Cys Val Leu Trp Met Glu Ile Asn Thr Phe
            20                  25                  30
Tyr Ala Asn Leu Ala Ala Glu Asp Phe Gly Arg Gly Ala His Arg Thr
        35                  40                  45
Trp Ala Ser Leu Phe Phe Met Leu Val Gly Phe Leu Val Leu Leu Gly
    50                  55                  60
Asn Ser Ser Val Gln Leu Leu Asp Lys Gly Val Phe Tyr Gly Lys Ala
 65                  70                  75                  80
Cys Phe Leu Ser Leu Gln Arg Lys Leu Glu Tyr Glu Glu Leu Glu Ser
                85                  90                  95
Ile Leu Leu Asn Asn Ile Leu Tyr Gly
            100                 105
<210>811
<211>164
<212>PRT
<213>Chlamydia trachomatis
<400>811
Pro Lys Ser Ile Asp Pro Ala Lys Thr Pro Val Met Met Tyr Cys Thr
  1                 5                  10                  15
Gly Gly Ile Arg Cys Glu Leu Tyr Ser Ala Leu Leu Leu Glu Lys Gly
            20                  25                  30
Phe Lys Glu Val Tyr Gln Leu Asp Gly Gly Val Ile Ala Tyr Gly Leu
        35                  40                  45
Lys Met Gly Thr Gly Lys Trp Arg Gly Lys Leu Phe Val Phe Asp Asp
    50                  55                  60
Arg Met Ala Met Pro Ile Asp Glu Ala Asp Pro Asn Val Ser Pro Ile
 65                  70                  75                  80
Ala Arg Cys Ser Leu Cys Asn Thr Asp Ser Asp Thr Tyr Tyr Asn Cys
                85                  90                  95
Ala Asn Thr Asp Cys Asn Asn Leu Phe Ile Cys Cys Glu Ser Cys Ile
            100                 105                 110
Ala Thr His Lys Gly Cys Cys Ser Glu Glu Cys Ser Gln Ala Pro Arg
        115                 120                 125
Ile Arg Ala Phe Ser Ala Glu Arg Gly Asn Lys Pro Phe Arg Arg Lys
    130                 135                 140
```

```
His Leu Cys Pro Thr Ile Glu Gln Ser Cys Cys Leu Lys Glu Gln Glu
145                 150                 155                 160
Asn Gln Pro Ala
```

<210>812
<211>170
<212>PRT
<213>Chlamydia trachomatis
<400>812

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Asp Val Phe Met Glu Lys Asn Tyr Tyr Ala Leu Ala Tyr Tyr Tyr Phe
  1               5                  10                  15
Gly Pro Val Ser Asn Pro Tyr Glu Glu Ile Ala Leu His Lys Gln Leu
             20                  25                  30
Phe Lys Thr Met Asp Val Ser Cys Arg Ile Tyr Ile Ser Glu Glu Gly
         35                  40                  45
Ile Asn Gly Gln Phe Ser Gly Tyr Gln Pro Asp Ala Glu Arg Tyr Met
     50                  55                  60
Ala Trp Leu Lys Gln Arg Pro Asp Phe Ala Ser Ile Lys Phe Lys Ile
 65                  70                  75                  80
His His Ile Glu Glu Asn Ile Phe Pro Arg Val Thr Val Lys Tyr Arg
                 85                  90                  95
Lys Glu Leu Val Ala Leu Gly Cys Ser Val Asp Thr Thr Lys Gln Gly
            100                 105                 110
Lys His Ile Ser Pro Glu Glu Trp His Glu Lys Leu Gln Glu Asn Arg
        115                 120                 125
Cys Leu Val Leu Asp Val Arg Asn Asn Tyr Glu Trp Lys Ile Gly His
    130                 135                 140
Phe Glu Asn Ala Val Leu Pro Asp Ile Glu Thr Phe Arg Glu Phe Pro
145                 150                 155                 160
Asp Tyr Ala Asp Arg Leu Ala Lys Glu His
                165                 170
```

<210>813
<211>209
<212>PRT
<213>Chlamydia trachomatis
<400>813

```
Met Ala Arg Tyr Cys Gly Pro Lys Asn Arg Ile Ala Arg Arg Phe Gly
  1               5                  10                  15
Ala Asn Ile Phe Gly Arg Gly Arg Asn Pro Leu Leu Arg Lys Pro Asn
             20                  25                  30
Pro Pro Gly Gln His Gly Met Gln Arg Lys Lys Lys Ser Asp Tyr Gly
         35                  40                  45
Leu Gln Leu Glu Glu Lys Gln Lys Leu Lys Ala Cys Tyr Gly Met Ile
     50                  55                  60
Leu Glu Lys Gln Leu Val Lys Ala Tyr Lys Glu Val Val Asn Lys Gln
 65                  70                  75                  80
Gly Asn Val Ala Gln Met Phe Leu Glu Lys Phe Glu Cys Arg Leu Asp
                 85                  90                  95
Ser Ile Val Tyr Arg Leu Gly Phe Ala Lys Thr Ile Phe Ala Ala Gln
            100                 105                 110
Gln Leu Val Ser His Gly His Val Leu Val Asn Gly Lys Lys Val Asp
        115                 120                 125
Arg Arg Ser Phe Phe Val Arg Pro Gly Met Gln Ile Ser Leu Lys Glu
    130                 135                 140
Lys Ser Lys Arg Leu Ala Ile Val Thr Glu Ser Leu Glu Asn Lys Asp
145                 150                 155                 160
Gln Ser Ser Leu Pro Ala Tyr Leu Ser Leu Asp Lys Ala Ala Phe Lys
                165                 170                 175
Gly Glu Leu Val Val Ala Pro Glu Leu Asp Gln Ile Ala Ser Gln Leu
            180                 185                 190
Pro Leu Pro Val Asn Val Ser Val Ile Cys Glu Phe Leu Ser His Arg
```

Sequence Listing

195 200 205
Thr

<210>814
<211>288
<212>PRT
<213>Chlamydia trachomatis
<400>814
Met Phe Ile Leu Pro Pro Pro Gln Glu Pro Leu Leu Gly Ala His Thr
1 5 10 15
Ser Ala Ala Gly Gly Leu His Asn Ala Leu Tyr Glu Gly Arg Asp Ile
20 25 30
Gly Ala Thr Thr Val Gln Leu Phe Thr Ala Asn Gln Arg Gln Trp Lys
35 40 45
Arg Arg Ala Leu Thr Gln Glu Met Val Asp Gln Phe Arg Ile Ala Leu
50 55 60
Asn Glu Thr Ser Leu Ser Tyr Ile Met Ser His Ala Gly Tyr Leu Asn
65 70 75 80
Asn Pro Gly Ala Pro Asn Pro Glu Ile Leu Glu Lys Thr Arg Val Cys
85 90 95
Met His Gln Glu Ile Ala Asp Cys Ile Ser Leu Gly Ile Ser Phe Val
100 105 110
Asn Phe His Pro Gly Ala Ala Leu Ser Asp Ser Lys Glu Ser Cys Leu
115 120 125
Asp Arg Ala Ile Thr Ser Phe Ser Gln Met Ala Pro Leu Phe Glu Asn
130 135 140
His Pro Pro Leu Val Val Leu Leu Glu Thr Thr Ala Gly Gln Gly Ser
145 150 155 160
Leu Ile Gly Ser Ser Phe Glu Glu Leu Ala Tyr Leu Ile Gln Gly Ile
165 170 175
Lys Ala Leu Ile Pro Ile Gly Val Cys Leu Asp Thr Cys His Ile Phe
180 185 190
Ala Ala Gly Tyr Asp Ile Ser Ser Val Ala Gly Trp Glu Gln Val Leu
195 200 205
Lys His Phe Asp Ala Val Ile Gly Leu Ser Phe Leu Arg Ala Ile His
210 215 220
Leu Asn Asp Ser Val Phe Ala Leu Gly Lys Asn Lys Asp Arg His Ala
225 230 235 240
Pro Ile Gly Glu Gly Cys Ile Gly Ser Asp Ser Phe Cys Phe Leu Met
245 250 255
Gln Asp Glu Arg Thr Arg Met Leu Pro Lys Tyr Leu Glu Thr Pro Gly
260 265 270
Gly Pro Asp Leu Trp Thr Lys Glu Ile Arg Tyr Leu Gln Lys Val Cys
275 280 285
<210>815
<211>356
<212>PRT
<213>Chlamydia trachomatis
<400>815
Val Met Arg Lys Asp Asp Glu Gly Ser Leu Val Arg Ser Leu Phe Asn
1 5 10 15
Leu Leu Ser Gly Thr Phe Phe Ser Arg Leu Thr Gly Met Leu Arg Glu
20 25 30
Ile Val Met Ala Thr Tyr Phe Gly Ala Asp Pro Leu Val Ala Ser Phe
35 40 45
Trp Leu Ala Phe Arg Thr Ile Phe Phe Leu Arg Lys Leu Leu Gly Gly
50 55 60
Pro Ile Leu Gly Leu Ala Phe Ile Pro His Phe Glu Phe Leu Arg Ala
65 70 75 80
Gln Asn Ile Ser Arg Ala Thr Phe Phe Phe Lys Ser Phe Ser Arg Phe
85 90 95

```
Phe Cys Tyr Ser Ala Ile Leu Phe Thr Leu Ile Ile Glu Leu Gly Leu
            100                 105                 110
Cys Val Trp Cys Ser Cys Val Thr Gly Ser Leu Phe Asp Thr Leu Phe
        115                 120                 125
Leu Thr Ile Ile Leu Leu Pro Ser Gly Ile Phe Leu Met Met Tyr Thr
    130                 135                 140
Val Asn Ser Thr Leu Leu His Cys Glu Lys Lys Phe Phe Ser Val Gly
145                 150                 155                 160
Leu Ala Pro Ser Val Val Asn Val Leu Trp Ile Gly Thr Val Phe Leu
                165                 170                 175
Ala Arg Asn Tyr Asp Pro Arg Asn Arg Ile Phe Gly Leu Ala Val Val
            180                 185                 190
Leu Val Val Gly Phe Ile Leu Glu Trp Ala Ile Thr Leu Pro Gly Val
        195                 200                 205
Met Lys Phe Leu Gly Gln Ser Lys Glu Val Pro Gln Glu Arg Asp Ser
    210                 215                 220
Ile Arg Ala Leu Ile Ala Pro Leu Ser Leu Gly Leu Leu Ser Met Gly
225                 230                 235                 240
Ile Phe Gln Leu Asn Leu Leu Cys Asp Met Trp Leu Ala Arg Tyr Ile
                245                 250                 255
Asn Glu Val Gly Pro Leu Tyr Leu Met Tyr Ser Val Arg Ile Gln Gln
            260                 265                 270
Leu Pro Val His Leu Phe Gly Leu Gly Val Phe Thr Val Leu Leu Pro
        275                 280                 285
Ala Ile Ser Arg Cys Val Gln Asp Gln Glu His Gln Gln Gly Tyr Asp
    290                 295                 300
Leu Leu Arg Phe Ser Leu Lys Leu Thr Val Ala Val Met Val Val Ile
305                 310                 315                 320
Thr Met Gly Leu Leu Leu Phe Ala Leu Pro Gly Val Arg Val Leu Tyr
                325                 330                 335
Glu His Gly Val Phe Pro Tyr Asn Ser Cys Ala Arg Tyr Cys Arg Ser
            340                 345                 350
Ser Lys Arg Val
        355
<210>816
<211>217
<212>PRT
<213>Chlamydia trachomatis
<400>816
Arg Trp Gly Tyr Cys Phe Leu Leu Cys Leu Gly Tyr Glu Cys Tyr Met
  1               5                  10                  15
Ser Thr Glu Cys Phe Leu Thr Thr Ala Val His Ala Ile Val Glu Val
            20                  25                  30
Leu Arg Gly Tyr Ser Gly Ser Ile Ile Pro Met Ala Leu Ala Pro Leu
        35                  40                  45
Val Ser Ala Leu Phe Tyr Ala Arg Arg Asn Tyr Lys Val Pro Met Leu
    50                  55                  60
Val Gly Ile Ile Ala Ala Val Val Asn Met Val Leu Asn Val Ile Gly
65                  70                  75                  80
Cys Leu Val Cys Lys Gln Val Ala Val Leu Ala Tyr Ala Thr Ser Leu
                85                  90                  95
Ala Ser Trp Gly Gln Leu Ala Met Leu Trp Tyr Cys Ala Gly Lys Ser
            100                 105                 110
Leu Pro Thr Tyr Lys Gly Leu Met Trp Arg Thr Phe Lys Glu Ser Gly
        115                 120                 125
Lys Thr Val Ile Thr Thr Ile Leu Ala Ala Val Ile Thr Ile Gly Val
    130                 135                 140
Asn Ile Val Thr His Thr Thr Tyr Val Val Phe Ile Glu Pro Leu Thr
145                 150                 155                 160
Val Pro Thr Lys Pro Leu Val Ser Phe Leu Asp Gln Cys Gly Val Phe
                165                 170                 175
```

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```
Phe Ala Glu Ser Ala Leu Phe Leu Ser Val Leu Phe Gly Leu Ala Lys
            180                 185                 190
Leu Leu Lys Thr Glu Asp Leu Val Asn Leu Thr Ser Phe Gln Tyr Trp
        195                 200                 205
Lys Gly His Gln Ser Ile Leu Arg Asn
    210                 215
<210>817
<211>132
<212>PRT
<213>Chlamydia trachomatis
<400>817
Ala Leu Leu Asp Asn Lys Ile Gln Thr Met Gly Arg Leu Tyr Glu Met
  1               5                  10                  15
Ser Asn Phe Ala Lys Asp Ile Met Lys Lys Tyr Phe Tyr Lys Gly Phe
             20                  25                  30
Val Gly Ala Leu Leu Leu Ala Cys Gly Ser Thr Asn Leu Ala Phe Ala
         35                  40                  45
Gln Ala Ser Ser Met Asp Ser Gln Leu Trp Ser Val Glu Asp Leu Asp
     50                  55                  60
Ser Tyr Leu Ser Ser Lys Gly Phe Val Glu Thr Arg Lys Arg Arg Trp
 65                  70                  75                  80
Ser Phe Thr Phe Ser Trp Arg Cys Pro Arg Ser Met Asp Leu Cys Lys
                 85                  90                  95
Arg Gly Ile Leu Arg Gln Leu Arg Leu Leu Leu Asn Leu Phe Tyr Leu
            100                 105                 110
Ser Ile Val Ile Val Val Asn Ser Ile Cys Met Trp Ile Thr Pro Leu
        115                 120                 125
Leu Ile Val Gly
    130
<210>818
<211>372
<212>PRT
<213>Chlamydia trachomatis
<400>818
Leu Glu Met Ser Ala Leu Asp Gly Phe Met Gln Lys Arg His Leu Glu
  1               5                  10                  15
Thr Thr Gln Thr Pro Thr Lys Pro Ile Leu Pro Ile Asn Arg Tyr Arg
             20                  25                  30
Ser Glu Phe Asn Leu Tyr Val Asp Tyr Thr Ala Ala Asn Ser Trp Met
         35                  40                  45
Thr Ser Lys Met Asn Trp Val Thr Ile Ala Gly Gly Glu Ser Ser Ala
     50                  55                  60
Ala Gly Leu Asp Ile Asn Arg Ala Phe Leu Gly Tyr Arg Phe Tyr Lys
 65                  70                  75                  80
Asn Pro Glu Thr Gln Ala Glu Val Phe Ala Glu Ile Gly Arg Ser Gly
                 85                  90                  95
Leu Gly Asp Ile Phe Asp Ser Asp Val Gln Phe Asn Ser Asn Phe Asp
            100                 105                 110
Gly Ile His Leu Tyr Ala Ala Arg Arg Ile Ser Glu Lys Leu Pro Phe
        115                 120                 125
Thr Met Ile Val His Gly Gly Pro Phe Val Val Asn Met Ala Glu Lys
    130                 135                 140
Glu Tyr Ala Trp Val Val Glu Ala Ile Leu Asn Lys Leu Pro Gly Asn
145                 150                 155                 160
Phe Val Val Lys Thr Ser Val Ile Asp Trp Asn Thr Leu Thr Ala Lys
                165                 170                 175
Thr Asn Asp Pro Ala Asp Ala Ser Thr Ala Gln Pro Ala Lys Pro Asn
            180                 185                 190
Thr Lys Tyr Asp Tyr Leu Val Trp Gln Trp Leu Val Gly Lys Ser Thr
        195                 200                 205
Ala Met Pro Trp Phe Asn Gly Gln Thr Lys Asn Leu Tyr Thr Tyr Gly
```

```
    210                 215                 220
Ala Tyr Leu Phe Asn Pro Leu Ala Glu Ile Pro Glu Asn Trp Lys Gln
225                 230                 235                 240
Ser Thr Thr Thr Pro Ala Thr Lys Ile Thr Asn Gly Lys Glu Asn His
                245                 250                 255
Ala Trp Phe Ile Gly Cys Ser Leu Gly Gly Val Arg Arg Ala Gly Asp
            260                 265                 270
Trp Ser Ala Thr Val Arg Tyr Glu Tyr Val Glu Ala Leu Ala Ile Pro
        275                 280                 285
Glu Ile Asp Val Ala Gly Ile Gly Arg Gly Asn Gln Met Lys Tyr Gly
    290                 295                 300
Phe Ala Gln Ala Ile Lys Gln Gly Leu Asp Pro Lys Glu Ser Asn Gly
305                 310                 315                 320
Phe Thr Asn Tyr Lys Xaa Val Ser Tyr Gln Phe Val Met Gly Leu Thr
                325                 330                 335
Asp Ser Val Ser Phe Arg Ala Tyr Ala Ala Tyr Ser Lys Pro Ala Asn
            340                 345                 350
Asp Asn Leu Gly Ser Asp Phe Thr Tyr Arg Lys Tyr Asp Leu Gly Leu
        355                 360                 365
Ile Ser Ser Phe
    370
<210>819
<211>350
<212>PRT
<213>Chlamydia trachomatis
<400>819
Gly Phe Phe Ile Phe Leu Tyr Cys Met Glu Ser Gly Pro Glu Ser Val
  1               5                  10                  15
Ser Ser Asn Gln Ser Ser Met Asn Pro Ile Ile Asn Gly Gln Ile Ala
             20                  25                  30
Ser Asn Ser Glu Thr Lys Glu Ser Thr Lys Ala Ser Glu Ala Ser Ser
         35                  40                  45
Ser Ala Ser Ser Ser Val Ser Ser Trp Ser Phe Leu Ser Ser Ala Lys
     50                  55                  60
Asn Ala Leu Ile Ser Leu Arg Asp Ala Ile Leu Asn Lys Asn Ser Ser
 65                  70                  75                  80
Pro Thr Asp Ser Leu Ser Gln Leu Glu Ala Ser Thr Ser Thr Ser Thr
                 85                  90                  95
Val Thr Arg Val Ala Ala Lys Asp Tyr Asp Lys Ala Lys Ser Asn Phe
            100                 105                 110
Asp Thr Ala Lys Ser Gly Leu Glu Asn Ala Lys Thr Leu Ala Glu Tyr
        115                 120                 125
Glu Thr Lys Met Ala Asp Leu Met Ala Ala Leu Gln Asp Met Glu Ala
    130                 135                 140
Asn Ser Asp Pro Ser Asn Asp His Thr Glu Glu Leu Asn Asn Ile Lys
145                 150                 155                 160
Lys Ala Leu Glu Ala Gln Lys Asp Thr Ile Asp Lys Leu Asn Lys Leu
                165                 170                 175
Val Thr Leu Gln Asn Gln Asn Lys Ser Leu Thr Glu Ala Leu Lys Thr
            180                 185                 190
Thr Asp Ser Ala Asp Gln Ile Pro Ala Ile Asn Ser Arg Leu Glu Ile
        195                 200                 205
Asn Lys Asn Ser Ala His Gln Ile Ile Lys Glu Leu Lys Glu Gln Ile
    210                 215                 220
Ser Asn Tyr Lys Ala Val Leu Thr Asp Val Glu Lys Val Ile Lys Glu
225                 230                 235                 240
Phe Ser Glu Ala Gly Ile Lys Leu Gly Gln Ala Leu Gln Ser Ile Val
                245                 250                 255
Asp Ala Gly Asp Gln Ser Gln Ala Ala Val Leu Gln Ala Arg Gln Ser
            260                 265                 270
Asn Ser Pro Asp Asn Ile Ala Ala Thr Lys Lys Leu Ile Asp Ala Ala
```

Sub'l Seq Listing

sequence listing

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        275                 280                 285
Lys Thr Lys Val Asn Glu Leu Lys Gln Glu His Gln Glu Ile Ala Asp
    290                 295                 300
Ser Pro Leu Val Lys Lys Ala Glu Glu Gln Ile Asn Gln Ala Gln Gln
305                 310                 315                 320
Asp Ile Gln Thr Ile Thr Pro Ser Gly Leu Asp Ile Pro Ile Val Gly
                325                 330                 335
Pro Ser Gly Ser Gly Xaa Pro Gln Glu Val Arg Gln Glu Arg
            340                 345                 350
<210>820
<211>331
<212>PRT
<213>Chlamydia trachomatis
<400>820
Trp Phe Gly Tyr Ser Tyr Arg Trp Ser Glu Trp Val Arg Xaa Ser Ala
  1               5                  10                  15
Gly Ser Ala Ala Gly Ala Leu Lys Ser Ser Asn Asn Ser Gly Arg Ile
             20                  25                  30
Ser Leu Leu Leu Asp Asp Val Asp Asn Glu Met Ala Ala Ile Ala Met
         35                  40                  45
Gln Gly Phe Arg Ser Met Ile Glu Gln Phe Asn Val Asn Asn Pro Ala
     50                  55                  60
Thr Ala Lys Glu Leu Gln Ala Met Glu Ala Gln Leu Thr Ala Met Ser
 65                  70                  75                  80
Asp Gln Leu Val Gly Ala Asp Gly Glu Leu Pro Ala Glu Ile Gln Ala
                 85                  90                  95
Ile Lys Asp Ala Leu Ala Gln Ala Leu Lys Gln Pro Ser Ala Asp Gly
            100                 105                 110
Leu Ala Thr Ala Met Gly Gln Val Ala Phe Ala Ala Ala Lys Val Gly
        115                 120                 125
Gly Gly Ser Ala Gly Thr Ala Gly Thr Val Gln Met Asn Val Lys Gln
    130                 135                 140
Leu Tyr Lys Thr Ala Phe Ser Ser Thr Ser Ser Ser Ser Tyr Ala Ala
145                 150                 155                 160
Ala Leu Ser Asp Gly Tyr Ser Ala Tyr Lys Thr Leu Asn Ser Leu Tyr
                165                 170                 175
Ser Glu Ser Arg Ser Gly Val Gln Ser Ala Ile Ser Gln Thr Ala Asn
            180                 185                 190
Pro Ala Leu Ser Arg Ser Val Ser Arg Ser Gly Ile Glu Ser Gln Gly
        195                 200                 205
Arg Ser Ala Asp Ala Ser Gln Arg Ala Ala Glu Thr Ile Val Arg Asp
    210                 215                 220
Ser Gln Thr Leu Gly Asp Val Tyr Ser Arg Leu Gln Val Leu Asp Ser
225                 230                 235                 240
Leu Met Ser Thr Ile Val Ser Asn Pro Gln Ala Asn Gln Glu Glu Ile
                245                 250                 255
Met Gln Lys Leu Thr Ala Ser Ile Ser Lys Ala Pro Gln Phe Gly Tyr
            260                 265                 270
Pro Ala Val Gln Asn Ser Val Asp Ser Leu Gln Lys Phe Ala Ala Gln
        275                 280                 285
Leu Glu Arg Glu Phe Val Asp Gly Glu Arg Ser Leu Ala Glu Ser Gln
    290                 295                 300
Glu Asn Ala Phe Arg Lys Gln Pro Ala Phe Ile Gln Gln Val Leu Val
305                 310                 315                 320
Asn Ile Ala Ser Leu Phe Ser Gly Tyr Leu Ser
                325                 330
<210>821
<211>543
<212>PRT
<213>Chlamydia trachomatis
<400>821
```

```
Lys Lys Tyr Tyr Trp Asp Arg Phe Ala Thr Ser Thr Thr Val Glu Leu
 1               5                  10                  15
Arg Glu Leu Ala Met Asn Arg Ile His Arg Thr Gln Gly Ser Leu Thr
            20                  25                  30
Asp Tyr Asn Ser Thr Leu Glu Ala Ile Ala Lys Lys Ile Ala Lys Pro
        35                  40                  45
Asp Ser Ala Thr Ile Val Ser Gln Val Ala Gln Tyr Glu Gln Phe Lys
    50                  55                  60
Met Glu Gln Glu Ala Leu Lys Ala Leu Leu Val Ser Phe Asp Gln Lys
65                  70                  75                  80
Ala Asp Gln Arg Tyr Arg Asn Leu Ile Gln Arg Leu Glu Gln Leu Asp
                85                  90                  95
Val Asp Arg Gln Thr Gly Arg Ser Ile Glu Ser Pro His Ile Gln Glu
            100                 105                 110
Lys Pro Met Ala Ser Leu Gln Ser Glu Asn Gln Val Val Ala Gln Ala
        115                 120                 125
Val Val Gln Ser Asp Ser Ser Met Pro Ile Phe Thr Gly Ile Lys Gln
    130                 135                 140
Ser Trp Ala Val Arg Leu Val Gln Gly Ile Arg Glu Ile Leu Asp Gln
145                 150                 155                 160
Leu Leu Val Asp Thr Ser Leu Phe Thr Glu Glu Glu Arg Gly Asp Leu
                165                 170                 175
Leu Ala Ile Arg Met Asp Ala Ala Ser Leu Gln Asp Lys Gln Glu Arg
            180                 185                 190
Leu Ser Ala Glu Asp Ile Arg Ser Leu Leu Ser Leu Ser Asn Asp Val
        195                 200                 205
Met Arg Val Leu Gln Lys Ala Ser Val Ser Ser Thr Arg Gln Leu Glu
    210                 215                 220
Leu Ile Gln Ser Leu Ile Asp Ile Phe Gly Thr Glu Glu Asn Leu Glu
225                 230                 235                 240
Gln Ser Phe Ala Gln Val Arg Leu Glu Asn Phe Gln Ala Ile Leu Ser
                245                 250                 255
Val Ile Lys Glu Arg Leu Thr Glu Glu Glu Phe Arg Val Phe Gln Glu
            260                 265                 270
Val Ser Glu Glu Ile Ser Ser Ile Gln Arg Thr Ser Glu Ser His Leu
        275                 280                 285
Ser Pro Glu His Ile Glu Ala Ile Ala Arg Val Gly Gly Tyr Leu Ser
    290                 295                 300
Ala Lys Ile Val Glu Ser Glu Leu Lys Ala Ser Gln Lys Val Asp Leu
305                 310                 315                 320
Cys Gln Arg Ile Ala Ala Met Tyr Gln Glu Gln Val Asp Ala Val Gln
                325                 330                 335
Ala Tyr His Ser Leu Glu Gln Asp Ala Leu Phe Val Asn Ser Arg Gln
            340                 345                 350
His Gly Tyr Phe Val Gln Val Ile Ser Leu Val Ser Ser Leu Met His
        355                 360                 365
Ser Leu Ser Pro Thr Ser Glu Glu Glu Arg Ile Leu Leu Asn Pro Ala
    370                 375                 380
Met Met Val Ser Val Leu Pro Thr Val Arg Ala Ile Gly Leu Arg Phe
385                 390                 395                 400
Asp Phe Leu Thr Ala Glu Gln Gln Gln Met Val Asn Ala Ala Val Ser
                405                 410                 415
Ser Leu Gln Gln Gln Gln Leu Asp Glu Phe Leu Gly Val Leu Cys Ala
            420                 425                 430
His Leu Val Val Val Asn Cys Gln Asn Lys Glu Thr Gly Leu Leu Glu
        435                 440                 445
Gly Leu Glu Glu Ser Phe Ser Glu Thr Leu Ser Gly Leu Ser Asn Asn
    450                 455                 460
Phe Val Leu Thr Ala Lys Met Gln Asp Ile Leu Gln Val Cys Ser Leu
465                 470                 475                 480
Gln Gly Phe Val Thr Leu Ala Asn Gly Asp Arg Tyr Glu Leu Phe Ser
```

SUBSTITUTE SHEET (RULE 26)

09851-0826US1

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                485                 490                 495
Tyr Asn Asp Ser Gly Glu Ala Val Cys Asp Glu Ile Ala Leu Gly Asp
            500                 505                 510
Gly Phe His Lys Val Leu Gly Thr Met Leu Ala Val Ala Leu Ser Gln
        515                 520                 525
Ala Glu Val Phe Lys Ala Arg Val Arg Ser Ile His Ser Ala Ser
    530                 535                 540
<210>822
<211>328
<212>PRT
<213>Chlamydia trachomatis
<400>822
Arg Phe Leu Lys Gln Arg Tyr Leu Lys Gln Glu Cys Asp Arg Phe Ile
  1               5                  10                  15
Leu Gln Ala Asp Ser Glu Lys Asn Met Ile His Lys Arg Met Val Gln
            20                  25                  30
Gly Glu Gln Lys Ser Leu Phe Leu Thr Lys Met Gln Thr Glu Leu Asn
        35                  40                  45
Ala Gly Lys Thr Ile Ala Gln Thr Lys Glu Val Glu Ala Ser Pro Leu
    50                  55                  60
Pro Ser Ala Val Ala Ser Val Leu Ile Asp His Tyr Met Pro Lys Glu
65                  70                  75                  80
Val Glu Phe Leu Glu Lys Ile Ser Ser Arg Leu Tyr Tyr Gly Asn Lys
                85                  90                  95
Gly Ser Asp Ile Gly Asn Thr Ile Leu Asp Ala Ile Ser Leu Tyr Val
            100                 105                 110
Asn Ser Ala Thr Tyr Phe Gly Phe Ala Asn Tyr Ile Gly Gln Pro Pro
        115                 120                 125
Val Val Gly Lys Thr Gly Glu Asn Ile Phe Ala Gly Ser Ala Asp Asn
    130                 135                 140
Ala Lys Ala Lys Leu Asp Glu Glu Arg Lys Gln Val Asp Val Phe Leu
145                 150                 155                 160
Glu Ile Thr Lys Ala Ala Lys Thr Thr Val Thr Asn Gln Gln Ser Ala
                165                 170                 175
Val Thr Asp Asp Asp Lys Leu Ser Thr Glu Gln Lys Ala Lys Ile Asn
            180                 185                 190
Ala Glu Leu Thr Gln Tyr Thr Asp Met Leu Asn Ala Ile Asn Asn Ser
        195                 200                 205
Leu Thr Ser Leu Lys Thr Gln Leu Ala Pro Leu Ser Val Ser Thr Val
    210                 215                 220
Glu Gly Val Asp Gly Val Phe Glu Val Lys Asn Gly Lys Pro Gly Glu
225                 230                 235                 240
Asn Gly Lys Asn Trp Arg Leu Val Leu Gln Thr Leu Glu Asp Thr Val
                245                 250                 255
Val Ser Gly Glu Val Gly Ser Pro Thr Asn Ile Gly Met Phe Gln Met
            260                 265                 270
Gln Ala Leu Val His Ser Asn Gln Gln Ala Tyr Ala Asp Met Gly Gln
        275                 280                 285
Asn Phe Gln Leu Glu Leu Gln Met His Leu Thr Ser Met Gln Gln Glu
    290                 295                 300
Trp Met Val Val Ala Thr Ser Leu Gln Leu Leu Asn Gln Ile Tyr Leu
305                 310                 315                 320
Gly Leu Ala Arg Asn Leu Leu Arg
                325
<210>823
<211>461
<212>PRT
<213>Chlamydia trachomatis
<400>823
Leu Leu Asn Arg Lys Ile Ser Ser Met Lys Arg Ser Arg Asn Leu Met
  1               5                  10                  15
```

Thr Ser Gln Glu Val Thr Thr Ser Val Pro Phe Gly Leu Thr Leu Arg
20 25 30
Leu Gln Gln Ser Ser Arg Leu Lys Thr Val Thr Thr Asp Glu Val Lys
35 40 45
Gln Ala Leu Thr Ser Gln Ala Asn Thr Ile Val Ser Asp Phe Ser Leu
50 55 60
Ala Gln Thr Leu Lys Ser Thr Ile Asn Lys Ile Val Gln Glu Asn Gly
65 70 75 80
Glu Phe Lys Ala Lys Val Asp Gly Ile Glu Arg Gln Tyr Thr Ile Phe
85 90 95
Gly Pro Leu Lys Asn Asp Thr Ser Ser Asn Lys Ala Thr Leu Asn Pro
100 105 110
Ile Leu Leu Asn Phe Gly Ser Ile Gly Phe Leu Pro Asn Ile Thr Leu
115 120 125
Ala Ala Asn Asn His Ala Glu Thr Ser Ala Arg Ala Phe Phe Lys Phe
130 135 140
Arg Ala Leu Ala Gln Val Glu Ser Thr Lys Leu Asp Gly Thr Leu Gln
145 150 155 160
Gly Ser Glu Asn Phe Leu Gln Lys Ile Asn Gln Leu Arg Lys Asp Leu
165 170 175
Phe Ser Tyr Gln Leu Leu Ala Gln Ser Tyr Glu Ile Arg Ser Leu Pro
180 185 190
Leu Pro Ser Ala Val Ala Ser Val Leu Ile Asp Arg Tyr Met Pro Gln
195 200 205
Glu Ile Asp Tyr Leu Thr Gln Met Lys Ser Asp Leu Tyr Tyr Ser Asn
210 215 220
Phe Xaa Ser Ser Val Gly Asn Ala Met Ile Glu Ala Ile Ala Gln Phe
225 230 235 240
Val Asn Gly Ala Thr Tyr Phe Asn Phe Ala Ser Phe Val Gly Gln Gln
245 250 255
Pro Met Thr Ala Met Ala Xaa Asp Thr Phe Ser Gly Ser Lys Glu Thr
260 265 270
Ala Glu Ala Lys Leu Ala Leu Glu Lys Gln Gln Ala Lys Leu Tyr Leu
275 280 285
Gln Tyr Ala Thr Gln Ala Leu Lys Val Val Gln Glu Gln Met Glu Arg
290 295 300
Val Gln Asn Asp Lys Val Ile Thr Asn Glu Gln Arg Leu Arg Ile Thr
305 310 315 320
Asp Ala Leu Lys Gly Tyr Ala Asp Asn Leu Asn Ala Ile Ser Gly Ser
325 330 335
Leu Val Leu Leu Gln Val Tyr Leu Asn Pro Leu Ser Val Gly Val Arg
340 345 350
Asn Gly Asn Gln Arg Gly Asn Asp Thr Gly Thr Asn Pro Lys Gly Thr
355 360 365
Phe His Val Phe Arg Gly Lys Asp Gln Trp Gln Ala Arg Leu Glu Ile
370 375 380
Leu Glu Asp Ala Leu Val Ser Gly Leu Pro Ser Asn Ile Ile Ser Gly
385 390 395 400
Gly Leu Phe Pro Leu Gln Ala Ser Val Gln Ser Asp Gln Gln Ala Tyr
405 410 415
Ala Asp Met Gly Gln Asn Tyr Gln Leu Glu Met Gln Met His Met Thr
420 425 430
Ala Met Gln Gln Glu Trp Thr Val Val Ala Thr Ser Leu Gln Ile Leu
435 440 445
Asn Gln Ile Tyr Leu Gly Leu Thr Arg Lys Leu Ala Ser
450 455 460

<210>824
<211>426
<212>PRT
<213>Chlamydia trachomatis
<400>824

```
Lys Thr Leu Val Glu Met Cys Ser Met Asn Ile Phe Asn Lys Ile Asn
 1               5                  10                  15
Ser Val Ser Lys Asp Tyr Thr Lys Ile Glu Glu Leu Phe Leu Pro Thr
            20                  25                  30
His Lys Asn Lys Thr Phe Cys Met Asn Gln Val Met Gln Phe Gln Lys
        35                  40                  45
Thr Glu Ile Glu Arg Ser Ala Ile Gln Asn Val Leu Ser Leu Leu Asp
    50                  55                  60
Leu Asp Asn Asp Val Lys Gly Lys Tyr Glu Gln Leu Val Ala Ser Leu
65                  70                  75                  80
Ser Ser Ser Ala Pro Thr Thr Thr Ser Gln Pro Ser Asp Glu Ser Ala
                85                  90                  95
Val Ile Thr Tyr Asp Pro Pro Ser Ser Asn Pro Leu Tyr Asn Ala Ser
            100                 105                 110
Lys Gln Ala Trp Val His Asn Val Leu Val Gly Phe Leu Ser Val Val
        115                 120                 125
Asn Glu Ala Lys Thr Lys Ala Thr Glu Ile Ala Gly Gln Gln Asn Pro
    130                 135                 140
Pro Gln Thr Asp Leu Lys Pro Leu Thr Asp Leu Phe Asp Ser Leu Thr
145                 150                 155                 160
Thr Leu Val Asp Lys Ala Asn His Arg Glu Leu Ser Asn Glu Asp Leu
                165                 170                 175
Glu Thr Phe Tyr Leu Leu Pro Asp Gln Ile Phe Ser Ala Ile Gln Thr
            180                 185                 190
Phe Pro Phe Glu Gly Asn Gln Lys Val Leu Phe Ser Asn Gln Leu Leu
        195                 200                 205
Asp Ser Phe Gly Glu Asp Ala Ser Ile Glu Gln Val Phe Ala Asp Ile
    210                 215                 220
Arg Ile Glu Gly Leu Gln Asp Thr Leu Asn Met Val Gln Ser Arg Leu
225                 230                 235                 240
Ser Ala Thr Glu Phe Glu Ser Phe Lys Glu Leu Gln Met Ile Ile Asp
                245                 250                 255
Thr Leu Arg Glu Tyr Val Glu Pro Phe Asn Asp Glu Gly Phe Asp Thr
            260                 265                 270
Ile Leu Gln Thr Ser Lys Asp Leu Ser Ser Ala Ile Ile Asn Ser Ser
        275                 280                 285
Leu Ser Ser Asn Asp Lys Ile Glu Leu Cys Arg Asn Ile Ala Asp Leu
    290                 295                 300
Tyr Arg Asp Gln Val Leu Ser Ile Lys Asn Leu Asp Asn Val Leu Asn
305                 310                 315                 320
Glu Thr Ile Tyr Ile Asn Ala Arg Asn Ser Ser Leu Phe Ser Asn Ile
                325                 330                 335
Cys Ser Leu Val Glu Phe Ile Met Gly Ser Phe Ala Pro Ile Gly Leu
            340                 345                 350
Asn Glu Thr Thr Ile Glu Val Thr Asn Ala Ser Ile Ala Gly Ala Leu
        355                 360                 365
Gln Ala Val Arg Ala Ile Asp Thr Arg Phe His Glu Leu Thr Pro Glu
    370                 375                 380
Gln Lys Asn Leu Val Asn Glu Thr Val Lys Lys Leu Asp Asp Phe Ser
385                 390                 395                 400
Gly Gly Asn Tyr Ile Gly Ala Phe Trp Ala Tyr Phe Thr Ser Ala Thr
                405                 410                 415
Val Val Ser Ser Lys Asp Cys Asp Asn Arg
            420                 425
```

<210>825
<211>206
<212>PRT
<213>Chlamydia trachomatis
<400>825

```
Ile Leu Gly Gln Leu Leu Tyr Leu Glu Arg Val Tyr Leu Arg Leu Asn
 1               5                  10                  15
```

```
Ser Ala Asn Pro Cys Ser Asp Phe Lys Asn Gln Ala Arg Pro Ala Ile
            20                  25                  30
Asp Met Glu Glu Leu Asn Ser Gly Leu Tyr Val Leu Arg Arg Leu Ala
        35                  40                  45
Val Ala Leu Glu Ala Gly Tyr Xaa Gly Val Gly Ser Val Val Asn Pro
    50                  55                  60
Ser Asn Arg Val Phe Pro Gly Gly Asp Trp Gly Val Arg Arg Ala Ala
65                  70                  75                  80
Gly Gly Ser Thr Pro Ala Ala Gly Thr Ile Ser Gly Ser Thr Xaa Ala
                85                  90                  95
Asp Ile Lys Gln Ser Thr Ala Lys Val Leu Val Thr Thr Ile Thr Asp
            100                 105                 110
Ser Leu Asn Ala Leu Ile Glu Asp Val Pro Glu Val Pro Met Thr Gln
        115                 120                 125
Val Thr Gly Val Ser Ser Asn Leu Val Leu Met Glu Ser Tyr Gln Gln
    130                 135                 140
Lys Asp Ser Leu Asn Asp Thr Glu Gln Ala Ser Val Phe Ala Ser Ala
145                 150                 155                 160
Tyr Ala Pro Ser Asp Glu Ser Ile Lys Thr Val Ile Lys Lys Glu Gln
                165                 170                 175
Glu Lys Glu Leu Gln Glu Gly Lys Asp Arg Val Thr Ala Gln Leu Thr
            180                 185                 190
Ala Gln Gly Ala Ser Asp Gln Val Ile Glu Lys Ser Leu Gly
        195                 200                 205
<210>826
<211>398
<212>PRT
<213>Chlamydia trachomatis
<400>826
Arg Ser Leu Trp Ala Asp Tyr Glu Lys Tyr Tyr Val Asp Glu Tyr Phe
  1                 5                  10                  15
Asp Thr His Val Lys Glu Ala Leu Trp Lys His Arg Ala Ser Ile Gly
            20                  25                  30
Glu Asn Ile Gln Glu Met Leu Asp Gln Cys Leu Asn Leu Gly Leu Asp
        35                  40                  45
Val Pro Asp Ser Leu Thr Lys Glu Asn Ile Asn Asp Ala Asn Ala Lys
    50                  55                  60
Leu Val Leu Gln Ala Trp Met Glu Ala Phe Asn Asn Ala Met Glu Val
65                  70                  75                  80
Glu Pro Ala Leu Gly Gly Ser Lys Glu Val Ile Asp Ser Val Leu Lys
                85                  90                  95
Met Ile Pro Phe Ala Lys Gln Ser Ser Asn Leu Ser Asp Thr Asp Ile
            100                 105                 110
Asn Thr Ile Tyr Thr Gln Ala Ala Leu Pro Pro Pro Glu Val Met Asp
        115                 120                 125
Tyr Tyr Leu Thr Arg Gln Asp Ala Gly Ile Cys Lys Gly Glu Val Val
    130                 135                 140
Lys Ala Phe Gln Gln Ala Thr Gln Asn Leu Gln Ser Val Arg Ser Asn
145                 150                 155                 160
Val Glu Glu Gln Ile Lys Glu Leu Glu Val Lys Lys Thr Ser Phe Leu
                165                 170                 175
Gln Ala Gln Ala Ser Leu Glu Ser Met Leu Glu Gly Val Lys Arg Leu
            180                 185                 190
Asn Asp Asn Gln Lys Phe Thr Ser Val Arg Leu Thr Ser Val Met Glu
        195                 200                 205
Cys Tyr Ala Gly Leu Ile Ala Leu Ser Gln Ile Thr Asp Val Leu Asp
    210                 215                 220
Ser Ala Gly Ile Ser Leu Ile Thr Gln Tyr Val Asp Lys Phe Leu Lys
225                 230                 235                 240
Leu Asn Asn Ala His Thr Ala Gln Thr Leu Ala His Val Ile Ser Tyr
                245                 250                 255
```

09/30/2004 15:28:22 PM

Met Ala Ala Tyr Cys Glu Val Ala Glu Cys Thr Met Ala Ser Thr Ile
260 265 270
Val Ser Glu Asp Thr Val Leu Gln Lys Val Lys Asp Lys Trp Asn Glu
275 280 285
Leu Lys Lys Glu Lys Phe Phe Glu Ser Phe Thr Leu Pro Asp Asp Asn
290 295 300
Glu Leu Lys Thr Asn Tyr Ile Thr Ser Thr Asn Asn Val Cys Arg Ala
305 310 315 320
Asn Phe Ser Asn Phe Val Asn Thr Val Ile Thr Glu Lys Ile Asn Leu
325 330 335
Thr Val Ala Val Arg Glu Ala Gln Ser Leu Leu Thr Glu Phe Gln Gly
340 345 350
Lys Ala Ser Glu Tyr Leu Asn Thr Phe Gln Ser Glu Ile Asn Thr Leu
355 360 365
Asn Gln Thr Tyr Asp Thr Leu Asp Pro Ala Lys Ala Ser Phe Asn Tyr
370 375 380
Phe Tyr Arg Glu Tyr Thr Phe Phe Thr Cys Thr Gly Cys Arg
385 390 395

<210>827
<211>106
<212>PRT
<213>Chlamydia trachomatis
<400>827
Ile Gln Pro Lys Leu Leu Leu Ile Thr Ser Thr Gly Ser Thr Pro Ser
1 5 10 15
Leu Arg Ala Gln Ala Val Asp Ser Trp Ile Asp Ser Thr Ser Leu Gly
20 25 30
Ser Ala Phe Ile His Leu Ile Leu Asn Thr Gln Ile Pro Lys Gln Glu
35 40 45
Asn Phe Leu Asn Pro Leu Ile Gln Glu Val Asn Phe Asn Asn Val Ala
50 55 60
Ala Asn Ala Val Asn Asp Leu Leu Ser Ile Thr Asn Asn Phe Ser Thr
65 70 75 80
Ser Ser Val Tyr Tyr Asn Leu Ser Ser Tyr Leu Val Glu Ser Lys Ala
85 90 95
Arg Lys Arg Phe Ile Leu Trp Gly Phe Leu
100 105

<210>828
<211>201
<212>PRT
<213>Chlamydia trachomatis
<400>828
Lys Ala Arg Gln Gly Lys Asp Leu Phe Cys Gly Asp Phe Phe Glu Phe
1 5 10 15
Met Gly Ala Leu Ala Lys Glu His Glu Tyr Ile Val Arg Asp Ile Lys
20 25 30
Ser Cys Tyr Arg Ala Glu Val Phe Gly Glu Ala Leu Leu Ala Arg Val
35 40 45
Glu Ala Leu Ala Gln Gly His Lys Val Thr Asp Ala Lys Ala Asn Ser
50 55 60
Met Arg Thr Gln Ala Asn Leu Tyr Leu Ser Phe Ile Arg Ile Ile Val
65 70 75 80
Glu Gln Leu Ala Val Leu Asp Ser Leu Leu Arg Ser Leu Asn Tyr Glu
85 90 95
Val Glu Lys Lys Asp Asn Asn Tyr Asp Lys Asp Lys Tyr Lys Ile Thr
100 105 110
Gly Pro Thr Asp Trp Ile Ser Thr Leu Ala Ser Leu Glu Gly Tyr Ala
115 120 125
Val Asn Gly Phe Asp Asn Ala Ser Leu Ser Gly Gly Leu Gly Pro Met
130 135 140
His Thr Leu Val Gln Thr Asp Gln His Asp Tyr Leu Thr Gln Ser Gln

09/544,523

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145                 150                 155                 160
Thr Gln Gln Leu Asn Leu Gln Asn Gln Met Thr Asn Ile Gln Gln Glu
                165                 170                 175
Trp Thr Leu Val Ser Thr Ser Met Gln Val Leu Asn Gly Ile Leu Ser
            180                 185                 190
His Leu Ala Ala Glu Ile Tyr Ser Asn
        195                 200
<210>829
<211>300
<212>PRT
<213>Chlamydia trachomatis
<400>829
Phe Phe Leu Glu Val Ser Thr Met Ala Ala Thr Val Pro Ile Ala Ser
  1               5                  10                  15
Pro Val Gly Arg Leu Leu Ser Ser Ala Thr Ala Thr Thr Leu Arg Gly
            20                  25                  30
Asn Ala Thr Ser Leu Arg Ser Lys Leu Ser Ser Val Asn Asp Leu Phe
        35                  40                  45
Asp Leu Ile Ser Ser Ser Cys Thr Leu Ala Arg Val Thr Pro Arg Thr
    50                  55                  60
Thr Val Ser Xaa Thr Gln Gln Gln Gln Leu Ser Thr Ile Glu Thr Thr
65                  70                  75                  80
Leu Gly Ser Ala Lys Ser Ala Ser Asn Ala Val Gln Ala Xaa Cys Gly
                85                  90                  95
Ile Val Gln Leu Leu Thr Gly Gly Leu Phe Phe Lys Thr Asn Pro Asp
            100                 105                 110
Gly Ser Phe His Leu Asp Leu Val Ser Gln Gln Arg Thr Leu Leu Ser
        115                 120                 125
Pro Leu Ser Leu Val Ser Lys Val Thr Arg Leu Ala Ser Lys Val Leu
    130                 135                 140
Gly Thr Val Lys Phe Met Gly Ser Gln Thr Phe Pro Val Tyr Gln Leu
145                 150                 155                 160
Gly Ala His Ala Thr Gly Ile Gly Leu Ser Ala Ser Ala Phe Gly Thr
                165                 170                 175
Val Ser Pro Pro Ser Met Ser Gln Lys Thr Gln Glu Lys Phe Ser Gly
            180                 185                 190
Thr Ser Asn Arg Ile Asn Leu Gln Lys Glu His Leu Lys Lys Thr Ala
        195                 200                 205
Ser Trp His Val Leu Lys Glu Leu Val Gln Val Cys Ser Thr Cys Phe
    210                 215                 220
Ala Ala Ser Trp Thr Cys Trp Leu Arg Leu Ser Val Ser Ser Ala Met
225                 230                 235                 240
Gln Phe Leu Gln His Leu Trp Glu Cys Thr Pro Leu Leu Leu Trp Val
                245                 250                 255
Ser Ser Ala Ser Tyr Leu Leu Trp Glu Met Leu Phe Phe Leu Ser Leu
            260                 265                 270
Phe Lys Val Cys Lys His His Ile Leu Glu Ala Arg Arg Tyr Ile Ser
        275                 280                 285
Ala Ser Xaa Phe Leu Ile Arg Ile Asn Phe Arg Cys
    290                 295                 300
<210>830
<211>161
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<213>Chlamydia trachomatis
<400>830
Trp Ile Phe Pro Pro Arg Ser Cys Phe Ala Thr Lys Asn Pro Pro Val
  1               5                  10                  15
Ser Thr Ile Thr Cys Gln Gln Ser Asn Ser Phe Ser Gln Gln Ser Ser
            20                  25                  30
Arg Asn Arg Glu Ile His Gly Leu Pro Asn Phe Pro Cys Leu Pro Val
        35                  40                  45
```

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Gly Cys Thr Arg Asn Trp Tyr Trp Leu Ile Cys Phe Cys Val Trp Asn
     50                  55                  60
Cys Gln Ser Ala Phe Asp Val Ala Glu Asn Ser Arg Glu Val Leu Gly
 65                  70                  75                  80
Asn Leu Lys Gln Asn Lys Pro Thr Glu Gly Thr Ser Lys Glu Asn Gly
                 85                  90                  95
Phe Met Ala Arg Leu Lys Arg Ala Arg Ala Ser Met Phe Asn Leu Leu
            100                 105                 110
Cys Ser Ile Leu Asp Leu Leu Ala Gln Ala Phe Cys Phe Ile Ser Asp
        115                 120                 125
Ala Val Ser Thr Ala Phe Met Gly Val His Thr Ala Phe Ile Val Gly
    130                 135                 140
Ile Phe Cys Phe Leu Ser Ala Leu Gly Asn Val Ile Leu Ser Ile Ala
145                 150                 155                 160
Phe
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<210>831
<211>102
<212>PRT
<213>Chlamydia trachomatis
<400>831

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Leu Gly Glu Ile Met Ala Pro Arg Lys Pro Ser Lys Lys Val Gly Pro
  1               5                  10                  15
Gln Lys Arg Pro Ser Ala Glu Lys Arg Val Ile Thr Ser Lys Lys Lys
            20                  25                  30
Gln Leu Arg Asn Gln Ser Phe Lys Ser Lys Val Arg Thr Ile Leu Lys
        35                  40                  45
Lys Phe Glu Leu Ala Val Gln Ser Gly Asp Val Glu Ser Ile Ser Ala
     50                  55                  60
Gly Leu Arg Ser Val Tyr Ser Ile Ala Asp Lys Ala Val Lys Arg Gly
 65                  70                  75                  80
Ile Phe Lys Lys Gly Lys Ala Asp Arg Val Lys Ser Arg Ala Ser Glu
                 85                  90                  95
Arg Ala Cys Pro Ala Ala
            100
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<210>832
<211>447
<212>PRT
<213>Chlamydia trachomatis
<400>832

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Ser Ile Pro Lys Phe Ala Ile Cys Arg Asp Ile Val Trp Gly Cys Thr
  1               5                  10                  15
Ala Gly Met Gln Tyr Val Met Gly Arg Thr Asn Ser Met Thr Arg Gly
            20                  25                  30
Phe Leu Asn Lys Arg Arg Val Leu Glu Lys Cys Arg Thr Ala Lys Gln
        35                  40                  45
Lys Ile His Tyr Cys Ile Ser Arg Tyr Phe His Tyr Leu Pro Pro Val
     50                  55                  60
Leu Ala Ile Leu Leu Pro Ile Gly Ser Trp Pro Phe Leu Ser Glu Gln
 65                  70                  75                  80
Gln Trp Trp Cys Gly Ser Phe Leu Phe Pro Val Val Ser Ser Leu Gly
                 85                  90                  95
Trp Leu Phe Ala Ile Gly Arg Arg Glu Arg Gln Leu Arg Ala Ala Ala
            100                 105                 110
Gly Gln Leu Leu Glu Ala Lys Ile Arg Lys Leu Thr Glu Gln Asp Glu
        115                 120                 125
Gly Leu Lys Asn Ile Arg Glu Thr Ile Glu Lys Arg Gln Lys Glu Thr
    130                 135                 140
Asp Arg Leu Lys Leu His Asn Asp Lys Leu Val Glu Gln Leu Gly Gln
145                 150                 155                 160
Ala Arg Glu Val Phe Ile Gln Ala Lys Gly Arg Tyr Asp His Met Glu
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                165                 170                 175
Glu Leu Ser Arg Arg Leu Lys Glu Glu Asn Gln Gln Leu Gln Met Gln
            180                 185                 190
Leu Glu Ala Ala Val Arg Glu Arg Asn Glu Lys Ile Leu Glu Asn Gln
        195                 200                 205
Glu Leu Leu Gln Glu Leu Lys Glu Thr Leu Ala Tyr Gln Gln Glu Leu
    210                 215                 220
His Asp Glu Tyr Gln Ala Thr Phe Val Glu Gln His Ser Met Leu Asp
225                 230                 235                 240
Lys Arg Gln Ala Tyr Ile Gly Asn Leu Glu Ala Lys Val Gln Asp Leu
                245                 250                 255
Met Cys Glu Leu Arg Asn Leu Leu Gln Leu Glu Met Gly Ala Lys Thr
            260                 265                 270
Asn Leu Pro Gly Lys Pro Val Ala Ser Arg Asp Val Val Ala Gln Leu
        275                 280                 285
Val Leu Glu Phe Arg Lys Ile Val Phe Arg Val Glu Thr Thr Glu Ala
    290                 295                 300
Ala Asp Ser Leu Thr Ala Leu Arg Tyr Thr Arg Thr Asp Pro Ser Ala
305                 310                 315                 320
His Asn Tyr Ser Leu Ala Cys Arg Gln Leu Phe Asp Gly Leu Arg Glu
                325                 330                 335
Glu Asn Leu Gly Met Leu Phe Ile Tyr Ala Pro Phe Ala Gln Arg Ser
            340                 345                 350
Phe Leu Pro Met Leu Cys Leu Thr Asp Trp Thr Gly Tyr Gly Leu Glu
        355                 360                 365
Asp Phe Leu Asn Arg Glu Ser Asp Val Val Leu Glu Gly Phe Ala Gln
    370                 375                 380
Trp Glu Arg Asp Leu Leu Thr Glu Ser Arg Val Glu Arg Ser Gly Lys
385                 390                 395                 400
Ile Val Ile Lys Thr Lys Ala Phe Gly Ala Thr Pro Phe Tyr Tyr Cys
                405                 410                 415
Val Val Thr Leu Asp Lys Gly Pro Phe Ala Gln His Ile Leu Gly Val
            420                 425                 430
Leu Tyr Pro Ala Lys Ala Ser Phe Phe Thr Asn Leu Ser Tyr Ile
        435                 440                 445
<210>833
<211>571
<212>PRT
<213>Chlamydia trachomatis
<400>833
Met Arg Met Asp Thr Leu Asp Ser Gln Ala Ala Glu Ala Ala Gln Glu
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Glu Glu Ile Gln Arg Lys Leu Glu Glu Leu Val Thr Leu Ala Lys Asp
             20                  25                  30
Gln Gly Phe Ile Thr Tyr Glu Glu Ile Asn Glu Ile Leu Pro Pro Ser
         35                  40                  45
Phe Asp Thr Pro Glu Gln Ile Asp Gln Val Leu Ile Phe Leu Ala Gly
     50                  55                  60
Met Asp Val Gln Val Leu Asn Gln Ala Asp Val Glu Arg Gln Lys Glu
 65                  70                  75                  80
Arg Lys Lys Glu Ala Lys Glu Leu Glu Gly Leu Ala Lys Arg Ser Glu
                 85                  90                  95
Gly Thr Pro Asp Asp Pro Val Arg Met Tyr Leu Lys Glu Met Gly Thr
            100                 105                 110
Val Pro Leu Leu Thr Arg Glu Glu Glu Val Glu Ile Ser Lys Arg Ile
        115                 120                 125
Glu Lys Ala Gln Val Gln Ile Glu Arg Ile Ile Leu Arg Phe Arg Tyr
    130                 135                 140
Ser Thr Lys Glu Ala Val Ser Ile Ala Gln Tyr Leu Ile Asn Gly Lys
145                 150                 155                 160
Glu Arg Phe Asp Lys Ile Val Ser Glu Lys Glu Val Glu Asp Lys Thr
```

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                 165                 170                 175
His Phe Leu Asn Leu Leu Pro Lys Leu Ile Ser Leu Leu Lys Glu Glu
            180                 185                 190
Asp Ala Tyr Leu Glu Glu Arg Leu Leu Ala Leu Lys Asp Pro Ala Leu
        195                 200                 205
Ser Lys Pro Asp Gln Ala Arg Leu Asn Asp Glu Leu Glu Lys Cys Arg
    210                 215                 220
Ile Arg Thr Gln Ala Tyr Leu Arg Cys Phe His Cys Arg His Asn Val
225                 230                 235                 240
Thr Glu Asp Phe Gly Glu Val Val Phe Lys Ala Tyr Asp Ser Phe Leu
                245                 250                 255
Gln Leu Glu Gln Gln Ile Asn Asp Leu Lys Ala Arg Ala Glu Arg Asn
            260                 265                 270
Lys Phe Ala Ala Ala Lys Leu Ala Ala Ala Arg Arg Lys Leu His Lys
        275                 280                 285
Arg Glu Val Ala Ala Gly Arg Thr Leu Glu Glu Phe Lys Lys Asp Val
    290                 295                 300
Arg Met Leu Gln Arg Trp Met Asp Lys Ser Gln Glu Ala Lys Lys Glu
305                 310                 315                 320
Met Val Glu Ser Asn Leu Arg Leu Val Ile Ser Ile Ala Lys Lys Tyr
                325                 330                 335
Thr Asn Arg Gly Leu Ser Phe Leu Asp Leu Ile Gln Glu Gly Asn Met
            340                 345                 350
Gly Leu Met Lys Ala Val Glu Lys Phe Glu Tyr Arg Arg Gly Tyr Lys
        355                 360                 365
Phe Ser Thr Tyr Ala Thr Trp Trp Ile Arg Gln Ala Val Thr Arg Ala
    370                 375                 380
Ile Ala Asp Gln Ala Arg Thr Ile Arg Ile Pro Val His Met Ile Glu
385                 390                 395                 400
Thr Ile Asn Lys Val Leu Arg Gly Ala Lys Lys Leu Met Met Glu Thr
                405                 410                 415
Gly Lys Glu Pro Thr Pro Glu Glu Leu Gly Glu Glu Leu Gly Phe Thr
            420                 425                 430
Pro Asp Arg Val Arg Glu Ile Tyr Lys Ile Ala Gln His Pro Ile Ser
        435                 440                 445
Leu Gln Ala Glu Val Gly Asp Gly Gly Glu Ser Ser Phe Gly Asp Phe
    450                 455                 460
Leu Glu Asp Thr Ala Val Glu Ser Pro Ala Glu Ala Thr Gly Tyr Ser
465                 470                 475                 480
Met Leu Lys Asp Lys Met Lys Glu Val Leu Lys Thr Leu Thr Asp Arg
                485                 490                 495
Glu Arg Phe Val Leu Ile His Arg Phe Gly Leu Leu Asp Gly Arg Pro
            500                 505                 510
Lys Thr Leu Glu Glu Val Gly Ser Ala Phe Asn Val Thr Arg Glu Arg
        515                 520                 525
Ile Arg Gln Ile Glu Ala Lys Ala Leu Arg Lys Met Arg His Pro Ile
    530                 535                 540
Arg Ser Lys Gln Leu Arg Ala Phe Leu Asp Leu Leu Glu Glu Glu Lys
545                 550                 555                 560
Ile Gly Ser Gly Lys Ile Lys Ser Tyr Lys Asn
                565                 570
<210>834
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<212>PRT
<213>Chlamydia trachomatis
<400>834
Ser Cys Cys Leu Gln Gly Val Leu Leu Tyr Arg Leu Asp Ile Ala Asp
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Phe Arg Val Trp Val Ser Ile Gly Val Ser Glu Gln Glu Arg His Tyr
             20                  25                  30
Pro Gln Pro Val Leu Val Ser Leu Ser Leu Phe Phe Lys Glu Glu Pro
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         35                  40                  45
Lys Ala Trp Ser Thr Asp Lys Val Ser Asp Ser Val Cys Tyr Ala Glu
     50                  55                  60
Leu Val Ser Leu Ile Glu Glu Val Ala Thr Asn Asn Pro Cys Ala Leu
 65                  70                  75                  80
Ile Glu Arg Leu Ala Lys Val Leu Leu Glu Lys Ile Glu Lys Ala Leu
                 85                  90                  95
Ala Gly Gln Val Ser Arg Ile Asp Leu Arg Val Ser Lys Glu Arg Pro
            100                 105                 110
Pro Ile Pro Asp Leu Leu Ser Pro Val Ser Phe Ser Ile Ser Arg Glu
        115                 120                 125
Val Pro
    130
<210>835
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<213>Chlamydia trachomatis
<400>835
Arg Gly Ala Met Thr Ser Trp Asn Phe Val Cys Leu Ser Leu Gly Ser
  1               5                  10                  15
Asn Leu Gly Asn Arg His Glu His Ile Arg Arg Ala Tyr Ala Ser Leu
            20                  25                  30
Lys Lys Ala Gly Ile Arg Asn Leu Lys Ser Ser Val Ile Leu Glu Thr
        35                  40                  45
Lys Ala Leu Leu Leu Glu Gly Ala Pro Lys Glu Trp Asp Leu Pro Tyr
     50                  55                  60
Phe Asn Ser Val Val Ile Gly Glu Thr Gln Leu Ser Pro Asp Glu Leu
 65                  70                  75                  80
Ile Glu Glu Ile Lys Met Ile Glu Ser Arg Phe Gly Gln Asp Ala Ser
                 85                  90                  95
Leu Lys Trp Gly Pro Arg Pro Ile Asp Ile Asp Val Leu Phe Tyr Gly
            100                 105                 110
Asp Glu Ala Phe Ser Tyr His Ser Asp Lys Cys Thr Ile Pro His Pro
        115                 120                 125
Lys Val Leu Glu Arg Pro Phe Ile Leu Ser Met Met Ala Ser Leu Cys
    130                 135                 140
Pro Tyr Arg Arg Phe Arg Leu Glu Gly Ser Ser Cys Asn Gly Lys Thr
145                 150                 155                 160
Phe Ala Glu Leu Ala Ala Ile Tyr Pro Leu Thr Glu Glu Asp Ala Leu
                165                 170                 175
Gly Ser Phe Gly Ser Ala Thr Gln Ile Met Gly Ile Val Asn Ile Thr
            180                 185                 190
Asp Asn Ser Ile Ser Asp Thr Gly Leu Phe Leu Glu Ala Ser Arg Ala
        195                 200                 205
Ala Ala His Ala Glu Arg Leu Phe Ala Glu Gly Ala Ser Ile Ile Asp
    210                 215                 220
Leu Gly Ala Gln Gln Pro Ile Leu Val
225                 230
<210>836
<211>229
<212>PRT
<213>Chlamydia trachomatis
<400>836
Phe Arg Gly Ala Thr Thr Asn Pro Arg Val Lys Asp Leu Gly Ser Val
  1               5                  10                  15
Glu Gln Glu Trp Glu Arg Leu Glu Pro Val Leu Arg Leu Leu Ala Glu
            20                  25                  30
Gly Trp Gly Ala Ala Gln Gln Cys Pro Asp Val Ser Ile Asp Thr Phe
        35                  40                  45
Arg Pro Glu Ile Ile Arg Arg Ala Val Glu Val Phe Pro Ile Arg Trp
     50                  55                  60
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Ile Asn Asp Val Ser Gly Gly Ser Leu Glu Met Ala His Leu Ala Lys
65 70 75 80
Glu Phe Gly Leu Arg Leu Leu Ile Asn His Ser Cys Ser Leu Pro Pro
85 90 95
Arg Pro Asp Cys Val Leu Ser Tyr Glu Glu Ser Pro Ile Glu Gln Met
100 105 110
Leu Arg Trp Gly Glu Ser Gln Leu Glu Gln Phe Ala Gln Val Gly Leu
115 120 125
Asp Thr Ser Trp Gln Val Val Phe Asp Pro Gly Ile Gly Phe Gly Lys
130 135 140
Thr Pro Val Gln Ser Met Leu Leu Met Asp Gly Val Lys Gln Phe Lys
145 150 155 160
Arg Val Leu Glu Cys Pro Val Leu Ile Gly His Ser Arg Lys Ser Cys
165 170 175
Leu Ser Met Leu Gly Arg Phe Asn Ser Asp Asp Arg Asp Trp Glu Thr
180 185 190
Ile Gly Cys Ser Val Ser Leu His Asp Arg Gly Val Asp Tyr Leu Arg
195 200 205
Val His Gln Val Glu Gly Asn Arg Arg Ala Leu Ala Ala Ala Ala Trp
210 215 220
Ala Gly Met Phe Val
225

<210>837
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<400>837
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Asp Pro Arg Gly Val Met Gly Ala Leu Gly Lys Leu Pro Trp Ser Tyr
20 25 30
Pro Glu Asp Leu Arg Phe Phe Ala Glu Thr Ile Arg Asn His Pro Ile
35 40 45
Ile Met Gly Arg Lys Thr Trp Glu Ser Leu Pro Asp Lys Tyr Lys His
50 55 60
Gly Arg Asp Ile Val Val Phe Ser Arg Arg Met His Pro Pro Gln Cys
65 70 75 80
Ile Gly Val Ser Ser Phe Ala Glu Tyr Gly Thr Leu Ser Leu Asn His
85 90 95
Pro Phe Leu Ile Gly Gly Ala Glu Leu Phe Glu Ser Phe Phe Gln Gln
100 105 110
Asn Leu Leu Lys Ala Cys Phe Val Thr His Ile Lys Lys Lys Tyr Trp
115 120 125
Gly Asp Thr Phe Phe Pro Ile Thr Arg Leu Ser Gly Trp Lys Lys Glu
130 135 140
Cys Ile Cys Asn Thr Glu Asp Phe Ser Ile Tyr Tyr Tyr Glu Asn Asn
145 150 155 160
Ser Asp Gln Asn Thr
165

<210>838
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<213>Chlamydia trachomatis
<400>838
Ser Ala Val Ala Asp Ala Arg Met Cys Lys Ala Glu Leu Ile Lys Lys
1 5 10 15
Glu Ala Asp Ala Tyr Leu Phe Cys Glu Lys Ser Gly Ile Tyr Leu Thr
20 25 30
Lys Lys Glu Gly Ile Leu Ile Pro Ser Ala Gly Ile Asp Glu Ser Asn
35 40 45
Thr Asp Gln Pro Phe Val Leu Tyr Pro Lys Asp Ile Leu Gly Ser Cys

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     50                  55                  60
Asn Arg Ile Gly Glu Trp Leu Arg Asn Tyr Phe Arg Val Lys Glu Leu
 65                  70                  75                  80
Gly Val Ile Ile Thr Asp Ser His Thr Thr Pro Met Arg Arg Gly Val
                 85                  90                  95
Leu Gly Ile Gly Leu Cys Trp Tyr Gly Phe Ser Pro Leu His Asn Tyr
            100                 105                 110
Ile Gly Ser Leu Asp Cys Phe Gly Arg Pro Leu Gln Met Thr Gln Ser
        115                 120                 125
Asn Leu Val Asp Ala Leu Ala Val Ala Ala Val Val Cys Met Gly Glu
    130                 135                 140
Gly Asn Glu Gln Thr Pro Leu Ala Val Ile Glu Gln Ala Pro Asn Met
145                 150                 155                 160
Val Tyr His Ser Tyr Pro Thr Ser Arg Glu Glu Tyr Cys Ser Leu Arg
                165                 170                 175
Ile Asp Glu Thr Glu Asp Leu Tyr Gly Pro Phe Leu Gln Ala Val Thr
            180                 185                 190
Trp Ser Gln Glu Lys Lys
        195
<210>839
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<213>Chlamydia trachomatis
<400>839
Asn Arg Gly Leu Ile Arg Thr Phe Phe Ala Ser Gly Tyr Val Glu Ser
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Arg Lys Glu Met Met Glu Val Phe Met Asn Phe Leu Asp Gln Leu Asp
             20                  25                  30
Leu Ile Ile Gln Asn Lys His Met Leu Glu His Thr Phe Tyr Val Lys
         35                  40                  45
Trp Ser Lys Gly Glu Leu Thr Lys Glu Gln Leu Gln Ala Tyr Ala Lys
     50                  55                  60
Asp Tyr Tyr Leu His Ile Xaa Ala Phe Pro Lys Tyr Leu Asp Ala Ile
 65                  70                  75                  80
His Ser Arg Cys Asp Asp Leu Glu Ala Arg Lys Leu Leu Leu Asp Asn
                 85                  90                  95
Leu Met Asp Glu Glu Asn Gly Tyr Pro Asn His Ile Asp Leu Trp Lys
            100                 105                 110
Gln Phe Val Phe Ala Leu Gly Val Thr Pro Glu Glu Leu Glu Ala His
        115                 120                 125
Glu Pro Ser Glu Ala Ala Lys Ala Lys Val Ala Thr Phe Met Arg Trp
    130                 135                 140
Cys Thr Gly Asp Ser Leu Ala Ala Gly Val Ala Ala Leu Tyr Ser Tyr
145                 150                 155                 160
Glu Ser Gln Ile Pro Arg Ile Ala Arg Glu Lys Ile Arg Gly Leu Thr
                165                 170                 175
Glu Tyr Phe Gly Phe Ser Asn Pro Glu Asp Tyr Ala Tyr Phe Thr Glu
            180                 185                 190
His Glu Glu Ala Asp Gly Arg His Ala Arg Glu Glu Lys Ala Leu Ile
        195                 200                 205
Glu Met Leu Leu Lys Asp Asp Ala Asp Lys Val Leu Glu Ala Ser Gln
    210                 215                 220
Glu Val Thr Gln Ser Leu Tyr Gly Phe Leu Asp Ser Phe Leu Asp Pro
225                 230                 235                 240
Arg Thr Cys Cys Ser Cys His Gln Ser Tyr
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<210>840
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<213>Chlamydia trachomatis
<400>840
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Pro Met Leu His Gln His Gln Thr Ala Ser Val Ala Leu Cys Pro Ala
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Leu His Leu Gln Gln Gly Leu Asp Met Leu Gln Met Pro Val Ala Glu
            20                  25                  30
Leu Ala Thr Phe Val Ser Gln Gln Ile Thr Ile Asn Pro Cys Phe Asp
        35                  40                  45
Leu Asp Ser Leu Asp Ser Pro Pro Glu Ser Phe Ser Phe Phe Pro Ile
    50                  55                  60
Ser Glu Gln His Pro Phe Thr Glu Thr Leu Ser Ala Tyr Leu Leu Arg
65                  70                  75                  80
Gln Ile Asp Thr Asn Phe Ala Ser Ser Gln Glu Arg Thr Ile Ala Gln
                85                  90                  95
Tyr Ile Val Gly Asn Leu Ser Pro Glu Gly Leu Phe Leu Glu Asn Pro
            100                 105                 110
Ser Leu Val Ala Ala Asp Leu Asn Val Ser Glu His Leu Phe His Lys
        115                 120                 125
Val Trp Gln Arg Ile Gln Gln Leu His Pro Leu Gly Val Gly Ala Pro
    130                 135                 140
Ser Leu Gln Ser Tyr Trp Val Ser Leu Leu Gln Thr Ser Pro His Lys
145                 150                 155                 160
Glu Ala Leu Ala Ile Ile Arg Asn His Phe Pro Arg Leu Ala Arg Cys
                165                 170                 175
Asp Phe Thr Thr Ile Ala Arg Lys Met His Ala Thr Thr Thr Glu Ile
            180                 185                 190
Leu Thr Phe Leu Arg His Ala Phe Ala Ser Ile Pro Trp Cys Pro Ala
        195                 200                 205
Ala Gly Phe Ser Glu Thr Leu His Pro Pro Ala Pro Ala Leu Pro Asp
    210                 215                 220
Ala Tyr Leu Ser Phe Ser Arg Asn Ser Ser Trp Asp Val Ser Ile Asn
225                 230                 235                 240
Lys Asp Cys Leu Pro Ser Ile Arg Leu Asn Asp Thr Val Leu Asp Ile
                245                 250                 255
Tyr Pro Ser Leu Pro Arg Glu Glu Lys Asp His Leu Ser Gln Gln Ile
            260                 265                 270
Arg Ala Ala Lys Gln Leu Leu Arg Asn Val Lys Lys Arg Glu Glu Thr
        275                 280                 285
Leu Leu Ala Ile Leu Arg Val Leu Ile Pro Tyr Gln Glu Glu Phe Leu
    290                 295                 300
Leu Lys Lys Arg Thr Ser Pro Lys Ala Phe Ser Val Lys Gln Ile Ala
305                 310                 315                 320
Arg Glu Leu Ser Leu His Glu Ala Thr Val Cys Arg Ala Ile Asp Asn
                325                 330                 335
Lys Thr Leu Ala Thr Pro Val Gly Leu Leu Pro Met Arg Ser Leu Phe
            340                 345                 350
Pro Gln Ala Val Gly Ser Cys Pro Asp Gln Ser Lys Ala Thr Ile Leu
        355                 360                 365
His Trp Ile His Gln Trp Ile Ser Thr Glu Lys His Pro Leu Ser Asp
    370                 375                 380
Ala Ala Ile Ser Gln Lys Ile Ile Glu Lys Gly Ile Pro Cys Ala Arg
385                 390                 395                 400
Arg Thr Val Ala Lys Tyr Arg Ser Gln Leu Asn Ile Pro Pro Ala His
                405                 410                 415
Gln Arg Lys His Leu Cys Ser Val Leu Thr Thr Thr Arg Thr Glu Asn
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Ser Arg His Thr Ile
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<210>841
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<213>Chlamydia trachomatis
<400>841
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Gln Phe Thr Ile Ser Gln Ala Lys Asn Arg Leu Gln Ser Pro Glu Asp
            20                  25                  30
Leu Asp Ser Lys Glu Tyr Pro Asp Pro Thr Arg Thr Val Tyr Ala Glu
        35                  40                  45
Tyr Gln Glu Gln Leu Arg Ala Ala Asn Ala Leu Asp Phe Asp Asp Leu
    50                  55                  60
Leu Phe Leu Thr Glu Lys Leu Leu Arg Ile Pro Glu Val Gln Gln Glu
65                  70                  75                  80
Tyr Ala Asn His Trp Lys Ala Leu Leu Ile Asp Glu Tyr Gln Asp Thr
                85                  90                  95
Asn His Ala Gln Tyr Leu Ile Ala Lys Arg Leu Ala Ala Ala His Asn
            100                 105                 110
Asn Ile Phe Val Val Gly Asp Pro Asp Gln Ser Ile Tyr Ser Trp Arg
        115                 120                 125
Gly Ala Asn Ile Ser Asn Ile Leu Asn Phe Glu Gln Asp Tyr Ser Gln
    130                 135                 140
Ala Leu Val Val Arg Leu Glu Glu Asn Tyr Arg Ser Cys Gly Thr Ile
145                 150                 155                 160
Leu Glu Ala Ala Asn Ala Leu Ile Gln Asn Asn Ser Ala Arg Leu Glu
                165                 170                 175
Lys Thr Leu Arg Ser Val Lys Gly Pro Gly Asp Lys Ile Phe Cys Phe
            180                 185                 190
Thr Gly Lys Asn Asp Arg Asp Glu Ala Glu Gln Val Leu Glu Glu Ile
        195                 200                 205
Ser Asn Leu His Ser Tyr Lys Asp Ile Pro Leu Ser Asp Ile Cys Ile
    210                 215                 220
Leu Tyr Arg Thr Asn Phe Gln Ser Gln Ser Phe Glu Ala Ala Leu Leu
225                 230                 235                 240
Lys Arg Gly Tyr Pro Tyr Glu Ile Ile Gly Gly Ile Ser Phe Tyr Lys
                245                 250                 255
Arg Arg Glu Ile Gln Asp Ile Leu Ala Phe Leu Arg Leu Phe Ser Asn
            260                 265                 270
Asn Tyr Asp Met Ala Ala Phe Glu Arg Thr Ile Ser Leu Lys Lys Cys
        275                 280                 285
Gly Ile Gly Ala Thr Thr Leu Ala Ala Leu Met Asn Tyr Ala Lys Ile
    290                 295                 300
Thr Asp Leu Pro Ile Leu Gln Ala Cys Trp Asp Val Leu Glu Lys Lys
305                 310                 315                 320
Ser Ile Arg Leu Thr Lys Lys Gln Gln Gln Gly Leu Phe Ser Tyr Leu
                325                 330                 335
Thr His Phe His Gln Met Glu Gln Leu Tyr Gly Asn Cys Asp Leu His
            340                 345                 350
Glu Phe Ile Asn Glu Thr Ile Arg Ile Thr Asp Tyr Leu Ser Ile Leu
        355                 360                 365
Lys Glu Asp Pro Glu Thr Tyr Glu Asp Arg Lys Asn Asn Leu Glu Gln
    370                 375                 380
Leu Leu Ala Glu Thr Gln Ile Trp Gly Lys Ser Ser Glu Asn Leu Pro
385                 390                 395                 400
Gly Phe Leu Glu Asp Leu Ala Leu Lys Ser Ser Ala Asp Glu Thr Ala
                405                 410                 415
Ser Ser His Asp Arg Leu Lys Leu Met Thr Ile His Asn Ser Lys Gly
            420                 425                 430
Leu Glu Phe Pro Val Val Phe Leu Val Gly Leu Glu Glu Asn Leu Leu
        435                 440                 445
Pro His Ala Asn Ser Lys Gly Met His Glu Asn Ile Glu Glu Glu Arg
    450                 455                 460
Arg Leu Cys Tyr Val Gly Ile Thr Arg Ala Gln Glu Tyr Leu Tyr Leu
465                 470                 475                 480
Ser Arg Ala Lys Thr Arg Phe Leu Trp Gly Thr Glu Arg Thr Met Val
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                485                 490                 495
Pro Ser Arg Phe Ile Ser Glu Leu Pro Arg Ala Leu Leu Lys Phe Val
            500                 505                 510

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<213>Chlamydia trachomatis
<400>842
Met His Arg Val Tyr Ala Phe Ser Lys Ile Phe Phe Glu Pro Glu Asn
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Ile Tyr Tyr Ile His Met Leu Thr Ser Glu Leu Asn Ala Ala Gln Val
             20                  25                  30
Thr Ala Val Thr Ala Pro Leu Gln Pro Val Leu Val Leu Ala Gly Ala
         35                  40                  45
Gly Ala Gly Lys Thr Arg Val Val Thr His Arg Ile Leu His Leu Ile
     50                  55                  60
Glu Glu Ser Arg Leu Asp Pro Lys Gln Ile Leu Ala Ile Thr Phe Thr
 65                  70                  75                  80
Asn Lys Ala Ala Asn Glu Leu Lys Glu Arg Ile Gln Ser Gln Cys Arg
                 85                  90                  95
Glu Leu Gly Tyr Ser Asp Val Pro Met Val Ser Thr Phe His Ser Leu
            100                 105                 110
Ser Val Tyr Ile Leu Arg Arg Ser Ile His Leu Leu Asp Arg Gln Ser
        115                 120                 125
Asn Phe Val Ile Tyr Asp Gln Ser Asp Ser Xaa Lys Leu Ile Lys Gln
    130                 135                 140
Xaa Tyr Ala Ser
145

<210>843
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<213>Chlamydia trachomatis
<400>843
Met His Glu Ala Phe Thr Ile Glu Gln Leu Pro Pro Ser Trp Gln Glu
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Gln Leu Lys Asp Glu Trp Ser Gln Pro Tyr Trp Ser Gln Leu Leu Ala
             20                  25                  30
Phe Leu Lys Ser Glu Tyr Ala Gln Ala Lys Ile Tyr Pro Lys Lys Glu
         35                  40                  45
Asn Ile Phe Ala Ala Leu Arg Ser Thr Pro Phe Asp Gln Val Arg Val
     50                  55                  60
Val Ile Leu Gly Gln Asp Pro Tyr His Gly Glu Gly Gln Ala His Gly
 65                  70                  75                  80
Leu Ser Phe Ser Val Pro Arg Gly Gln Ala Leu Pro Pro Ser Leu Arg
                 85                  90                  95
Asn Ile Phe Gln Glu Leu His Thr Asp Leu Gly Ile Arg Asn Glu Ser
            100                 105                 110
Gly Cys Leu Gln Ala Trp Ala Asp Gln Gly Val Leu Leu Leu Asn Thr
        115                 120                 125
Val Leu Thr Val Arg Ala Gly Glu Ala Phe Ser His Ala Gly Arg Gly
    130                 135                 140
Trp Glu Arg Phe Thr Asp Ala Ile Val Thr Lys Leu Ile Gln Asn Arg
145                 150                 155                 160
Thr His Val Ile Phe Val Leu Trp Gly Asn Ala Ala Arg Gln Lys Cys
                165                 170                 175
Asn Leu Leu Phe Gln Thr Lys His Gln His Ala Val Leu Ala Cys Pro
            180                 185                 190
His Pro Ser Pro Leu Ala Ala His Arg Gly Phe Phe Gly Cys Cys His
        195                 200                 205
Phe Ser Lys Ile Asn Tyr Leu Leu Lys Lys Gln Gly Lys Thr Met Ile
    210                 215                 220
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Asn Trp Lys Ile Glu
225
<210>844
<211>79
<212>PRT
<213>Chlamydia trachomatis
<400>844
Leu Glu Asp Arg Met Ile Asp Gly Ile Gln Thr Cys Ser Phe Ser Pro
1 5 10 15
Thr His Arg Leu Thr Ala Lys Ser Ala Val Ser Ile Glu Met Pro Leu
20 25 30
Ala Thr Gln Asn Leu Gln Glu Gly Ala Leu Val Asn Ala Lys Leu Glu
35 40 45
Ala Asp Phe Ala Arg Ala Glu Gln Ile Leu Thr Glu Met Gln Glu Ile
50 55 60
Arg Ser Ser Leu Glu Arg Ser Leu Glu Thr Leu Phe Pro Arg Glu
65 70 75
<210>845
<211>209
<212>PRT
<213>Chlamydia trachomatis
<400>845
Met Lys Ile Leu Ile Ala Ser Ser His Gly Tyr Lys Val Arg Glu Thr
1 5 10 15
Lys Ala Phe Leu Lys Lys Leu Gly Glu Phe Asp Ile Phe Ser Leu Val
20 25 30
Asp Tyr Pro Ser Tyr Gln Pro Pro Lys Glu Thr Gly Glu Thr Pro Glu
35 40 45
Glu Asn Ala Ile Gln Lys Gly Leu Phe Ala Ala Gln Thr Phe Arg Cys
50 55 60
Trp Thr Ile Ala Asp Asp Ser Met Leu Ile Ile Pro Ala Leu Gly Gly
65 70 75 80
Leu Pro Gly Lys Leu Ser Ala Ser Phe Ala Gly Glu Gln Ala Asn Asp
85 90 95
Lys Asp His Arg Lys Lys Leu Leu Glu Asn Met Arg Leu Leu Glu Asn
100 105 110
Thr Ile Asp Arg Ser Ala Tyr Phe Glu Cys Cys Val Ala Leu Ile Ser
115 120 125
Pro Phe Gly Lys Ile Phe Lys Ala His Ala Ser Cys Glu Gly Thr Ile
130 135 140
Ala Phe Glu Glu Arg Gly Ser Ser Gly Phe Gly Tyr Asp Pro Leu Phe
145 150 155 160
Val Lys His Asp Tyr Lys Gln Thr Tyr Ala Glu Leu Pro Glu Ala Ile
165 170 175
Lys Asn Gln Val Ser His Arg Ala Lys Ala Leu Val Lys Leu Gln Pro
180 185 190
Tyr Val Glu Thr Val Leu Ala Asn His Leu Leu Ala Gly Lys Glu Ser
195 200 205
Leu

<210>846
<211>423
<212>PRT
<213>Chlamydia trachomatis
<400>846
Arg Lys Ile Arg Phe Pro Leu Ser Lys Arg Asp Pro Lys Glu Ile Met
1 5 10 15
Lys Thr Ile Cys Lys Leu Val Ile Leu Ala Leu Leu Phe Pro Asn Val
20 25 30
Ser Tyr Ala Leu Val Gln Val Gly Leu Glu Arg Leu Phe Gln Glu Glu
35 40 45

sequence listing

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Lys Tyr Leu Glu Lys Ile Arg Gly Lys Arg Val Ala Leu Ile Ser His
     50                  55                  60
Ser Ala Ala Ile Asn Arg Gln Gly Glu His Ser Leu Cys Val Phe Asn
 65                  70                  75                  80
Lys His Lys Gly Val Cys Lys Leu Ser Ala Leu Cys Thr Leu Glu His
                85                  90                  95
Gly Tyr Phe Gly Ala Ser Ile Ala Glu Thr Pro Gly Tyr Asp Pro Ile
            100                 105                 110
Leu Glu Asp Ile Pro Val Ile Ser Leu Phe Ala Ser Lys Glu Ile Pro
        115                 120                 125
Ala Glu Val Ile Glu Ala Cys Asp Val Phe Val Tyr Asp Val Gln Asp
    130                 135                 140
Ile Gly Val Arg Ser Tyr Ser Phe Ile Ser Ala Leu Leu Gln Val Val
145                 150                 155                 160
Lys Ala Ser Ala Ser Ser Lys Lys Glu Leu Ile Val Leu Asp Arg Pro
                165                 170                 175
Asn Pro Met Gly Gly Asn Leu Val Asp Gly Pro Leu Pro Asp Lys Glu
            180                 185                 190
Ala Phe Pro Ala Ile Pro Tyr Cys Tyr Gly Met Thr Pro Gly Glu Leu
        195                 200                 205
Ala Leu Leu Tyr Arg Ala Arg Tyr Ala Pro Lys Ala Ser Val Thr Val
    210                 215                 220
Val Pro Met Arg Gly Trp Lys Arg Ser Met Ile Phe Ala Asp Thr Gly
225                 230                 235                 240
Leu Ile Trp Val Pro Thr Ser Pro Gln Ile Pro Asp Ala Gln Ser Ala
                245                 250                 255
Tyr Phe Tyr Ala Thr Thr Gly Ile Ile Gly Ala Leu Ser Val Thr Asn
            260                 265                 270
Ile Gly Ile Gly Tyr Thr Leu Pro Phe Lys Val Leu Gly Ala Pro Trp
        275                 280                 285
Met Asp Gly Cys Lys Val Ala Gln Glu Leu Asn Lys Ala Arg Leu Pro
    290                 295                 300
Gly Val His Phe Leu Pro Phe Met Tyr Glu Pro Phe Phe Gly Lys Phe
305                 310                 315                 320
Lys Met Glu Met Cys Ser Gly Val Leu Val Val Leu Gln Asp Pro Lys
                325                 330                 335
Gln Phe Leu Pro Met Glu Thr Gln Ser Val Ile Leu Gly Val Leu Lys
            340                 345                 350
Thr Leu Tyr Pro Lys Glu Val Glu Gln Ala Phe Leu Leu Leu Asp Arg
        355                 360                 365
Leu Val Pro Arg Arg Lys Ala Ile Gln Asn Leu Leu Gly His Ser Glu
    370                 375                 380
Phe Leu Asn Val Cys Leu His Lys Lys Tyr Ile Thr Trp Pro Leu Arg
385                 390                 395                 400
Thr Met Cys Ala Glu Gly Arg Lys Gln Phe Ile Glu Gln Arg Gln Pro
                405                 410                 415
Phe Leu Leu Pro Glu Tyr Ala
            420
<210>847
<211>533
<212>PRT
<213>Chlamydia trachomatis
<400>847
Gly Leu Ser Asn Ser Phe Arg Asp Gln Glu Gln Gly Leu Gln Ala Val
  1                 5                  10                  15
Leu Arg Ala Ala Arg Val Ile Ser His Met Phe Ser Gln Thr Ile Gly
             20                  25                  30
Pro Tyr Gly Phe Ser Thr Ile Val His Asn Val Gln Asp Thr Arg Thr
         35                  40                  45
Thr Gln Asp Ser Gln Ser Met Leu Lys Asp Ile Leu Phe Pro Asp Val
     50                  55                  60
```

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```
Phe Glu Asn Ile Gly Met Lys Leu Ile Arg Asp Thr Ala Leu Gly Thr
 65                  70                  75                  80
Arg Met Arg Phe Gly Asp Gly Ala Lys Thr Thr Ala Leu Leu Ile Glu
                85                  90                  95
Ala Leu Leu Ala Glu Gly Met Thr Gly Ile Gln Lys Gly Leu Asp Pro
            100                 105                 110
His Glu Ile His Arg Gly Met Leu Leu Ala Glu Lys Lys Ile Gln Glu
        115                 120                 125
Val Phe Tyr Arg Glu Thr Phe Pro Leu Ser Asp Leu Glu His Thr Val
    130                 135                 140
Tyr Val Ser Ser Ile Ala Arg Arg Phe Asn Ser Glu Ile Ala Ser Val
145                 150                 155                 160
Leu Ser Ser Ala Val Gly Tyr Gly Gly Lys Asn Gly Tyr Tyr Ile Val
                165                 170                 175
Glu Glu His Glu Glu Ser Glu Thr Tyr Trp His Ala Glu Glu His Ala
            180                 185                 190
Val Trp Asp Phe Gly Tyr Ala Ser Pro Tyr Phe Ile Thr His Ala Glu
        195                 200                 205
Thr Gly Thr Val Glu Tyr Ser Gln Val Tyr Ile Leu Val Ser Glu His
    210                 215                 220
Pro Leu His Tyr Ser Asn Pro Ser Phe Leu Thr Phe Leu Gln Ser Val
225                 230                 235                 240
Val Gln Ala Gly Lys Thr Pro Leu Val Ile Val Ala Glu Ala Phe Asp
                245                 250                 255
Lys Glu Leu Leu Ala Met Leu Glu Met Asn Gln Ile Glu Arg Val Phe
            260                 265                 270
Pro Val Cys Ala Val Lys Val Ser Gly Lys His Ala Arg Glu Ser Leu
        275                 280                 285
Glu Asp Ile Ala Val Leu Thr Gly Ala Thr Leu Leu Pro Glu Met Asp
    290                 295                 300
Phe Glu Asp Ser Glu Glu Glu Arg Ile Ala Asn Arg Leu Gly Phe Val
305                 310                 315                 320
Ala Gly Ile Cys Val Ser Ser Thr Ser Leu Cys Val Pro Arg Glu Thr
                325                 330                 335
Asp Asn Lys Gln Arg Val Ala Glu His Cys Ala Phe Leu Gln Asp Lys
            340                 345                 350
Leu Ser Phe His Arg Lys Lys Ser Ser Ala Arg Leu Arg Arg Arg Leu
        355                 360                 365
Ala Arg Leu Ser Thr Gly Glu Val Cys Ile His Ile Ala Ala Asp Cys
    370                 375                 380
Ile Pro Gln Glu Glu Ile Gly Tyr Ile Thr Ser Ser Ile Arg Ala Met
385                 390                 395                 400
Thr Glu Ser Leu Arg Ser Gly Cys Leu Pro Gly Gly Gly Cys Ala Phe
                405                 410                 415
Ile Arg Ala Ala Arg Glu Ile Ser Val Pro Leu Ala Leu Ser Pro Ser
            420                 425                 430
Glu Arg Phe Gly Phe Leu Ala Val Leu Ser Ala Ala Glu Lys Pro Phe
        435                 440                 445
Arg Ala Ile Val Thr Arg Ser Gly Arg Val Glu Glu Glu Val Phe Ser
    450                 455                 460
Glu Val Phe Ser Gln Ala Asp Trp Arg Val Gly Phe Asn Gly Val Ser
465                 470                 475                 480
Gly Phe Val Glu Asp Ile Val Ser Gln Gly Ile Cys Asp Gly Ala Ser
                485                 490                 495
Cys Ile Gln His Ala Leu Ser His Ala Val Gly Thr Thr Gly Leu Leu
            500                 505                 510
Leu Thr Ser Ala Leu Phe Ile Ala Ser Gln Glu Pro Met Leu Arg Glu
        515                 520                 525
Glu Asn Ser Glu Glu
    530
<210>848
```

<211>210
<212>PRT
<213>Chlamydia trachomatis
<400>848

```
Val Gln Ile Leu Ser Gly Ala Leu Phe Leu Ser Arg Arg Ser Thr Met
  1               5                  10                  15
Gly Ser Leu Val Gly Arg Gln Ala Pro Asp Phe Ser Gly Lys Ala Val
             20                  25                  30
Val Cys Gly Glu Glu Lys Glu Ile Ser Leu Ala Asp Phe Arg Gly Lys
         35                  40                  45
Tyr Val Val Leu Phe Phe Tyr Pro Lys Asp Phe Thr Tyr Val Cys Pro
     50                  55                  60
Thr Glu Leu His Ala Phe Gln Asp Arg Leu Val Asp Phe Glu Glu His
 65                  70                  75                  80
Gly Ala Val Val Leu Gly Cys Ser Val Asp Asp Ile Glu Thr His Ser
                 85                  90                  95
Arg Trp Leu Thr Val Ala Arg Asp Ala Gly Gly Ile Glu Gly Thr Glu
            100                 105                 110
Tyr Pro Leu Leu Ala Asp Pro Ser Phe Lys Ile Ser Glu Ala Phe Gly
        115                 120                 125
Val Leu Asn Pro Glu Gly Ser Leu Ala Leu Arg Ala Thr Phe Leu Ile
    130                 135                 140
Asp Lys His Gly Val Ile Arg His Ala Val Ile Asn Asp Leu Pro Leu
145                 150                 155                 160
Gly Arg Ser Ile Asp Glu Glu Leu Arg Ile Leu Asp Ser Leu Ile Phe
                165                 170                 175
Phe Glu Asn His Gly Met Val Cys Pro Ala Asn Trp Arg Ser Gly Glu
            180                 185                 190
Arg Gly Met Val Pro Ser Glu Glu Gly Leu Lys Glu Tyr Phe Gln Thr
        195                 200                 205
Met Asp
    210
```

<210>849
<211>134
<212>PRT
<213>Chlamydia trachomatis
<400>849

```
Leu Ala Cys Gly Met Lys Phe Thr Val Ala Val Phe Gly Glu Ala Glu
  1               5                  10                  15
Glu Gly Ser Phe Glu Ser Ala Tyr Leu Cys Ser Ser Leu Thr Asp Leu
             20                  25                  30
His Asn Asn Leu Gly His Gly Arg Asp Ser Pro Ser Gly Ile Ser Leu
         35                  40                  45
Ala Val Gln Ala Ile Met Gln Gly Tyr Asp Ile Leu Phe Phe Arg Val
     50                  55                  60
Lys Glu Glu Gly Phe Phe Ile Asp Ser Tyr Phe Phe Gly Leu His Phe
 65                  70                  75                  80
Leu Asn Thr Gln Thr Ser Leu Thr Asn Ile Val Ala Leu Ala Leu Pro
                 85                  90                  95
Gly Val Gly Asp Phe Asn Ile Ile Glu Ala Ser Leu Ala Leu Cys Arg
            100                 105                 110
Lys Leu Lys Ser Leu Leu Leu Phe Ser Asp Gln Asp Leu Tyr Asp Phe
        115                 120                 125
Leu Thr Phe Lys Asp Ala
    130
```

<210>850
<211>177
<212>PRT
<213>Chlamydia trachomatis
<400>850

```
Ser Ala Val Phe Ala Gly Tyr Ser Ser Arg Ser Arg Arg Thr Ser Ser
```

```
  1               5                  10                  15
Arg Leu His Ala His His Asn Glu Leu Ala Met Ile Ser Glu Arg Leu
             20                  25                  30
Asp Glu Gln Asp Thr Lys Leu Gln Gln Leu Ser Ser Thr Gln Asp His
         35                  40                  45
Asn Leu Pro Arg Gln Val Gln Arg Leu Glu Thr Asp Gln Lys Ala Leu
     50                  55                  60
Ala Lys Thr Leu Ala Ile Leu Ser Gln Ser Val Gln Asp Ile Arg Ser
 65                  70                  75                  80
Ser Val Gln Asn Lys Leu Gln Glu Ile Gln Gln Glu Gln Lys Lys Leu
                 85                  90                  95
Ala Gln Asn Leu Arg Ala Leu Arg Asn Ser Leu Gln Ala Leu Val Asp
            100                 105                 110
Gly Ser Ser Pro Glu Asn Tyr Ile Asp Phe Leu Ala Gly Glu Thr Pro
        115                 120                 125
Glu His Ile His Ile Val Lys Gln Gly Glu Thr Leu Ser Lys Ile Ala
    130                 135                 140
Ser Lys Tyr Asn Ile Pro Val Val Glu Leu Lys Lys Leu Asn Lys Leu
145                 150                 155                 160
Asn Ser Asp Thr Ile Phe Thr Asp Gln Arg Ile Arg Leu Pro Lys Lys
                165                 170                 175
Lys

<210>851
<211>214
<212>PRT
<213>Chlamydia trachomatis
<400>851
Glu Asn Cys Tyr Arg Ile Trp Arg Glu Thr Phe Pro Met Leu Gly Ser
  1               5                  10                  15
Ile Ser Phe Thr Thr Tyr Lys Glu Asn Leu Met Arg Lys Thr Ile Phe
             20                  25                  30
Lys Ala Phe Asn Leu Leu Phe Ser Leu Leu Phe Leu Ser Ser Cys Ser
         35                  40                  45
Tyr Pro Cys Arg Asp Trp Glu Cys His Gly Cys Asp Ser Ala Arg Pro
     50                  55                  60
Arg Lys Ser Ser Phe Gly Phe Val Pro Phe Tyr Ser Asp Glu Glu Ile
 65                  70                  75                  80
Gln Gln Ala Phe Val Glu Asp Phe Asp Ser Lys Glu Glu Gln Leu Tyr
                 85                  90                  95
Lys Thr Ser Ala Gln Ser Thr Ser Phe Arg Asn Ile Thr Phe Ala Thr
            100                 105                 110
Asp Ser Tyr Ser Ile Lys Gly Glu Asp Asn Leu Thr Ile Leu Ala Ser
        115                 120                 125
Leu Val Arg His Leu His Lys Ser Pro Lys Ala Thr Leu Tyr Ile Glu
    130                 135                 140
Gly His Thr Asp Glu Arg Gly Ala Ala Ala Tyr Asn Leu Ala Leu Gly
145                 150                 155                 160
Ala Arg Arg Ala Asn Ala Val Lys Gln Tyr Leu Ile Lys Gln Gly Ile
                165                 170                 175
Ala Ala Asp Arg Leu Phe Thr Ile Ser Tyr Gly Lys Glu His Pro Val
            180                 185                 190
His Pro Gly His Asn Glu Leu Ala Trp Gln Gln Asn Arg Arg Thr Glu
        195                 200                 205
Phe Lys Ile His Ala Arg
    210
<210>852
<211>145
<212>PRT
<213>Chlamydia trachomatis
<400>852
```

```
Pro Asp Gly Thr Arg Leu Val Phe Val Ser Asn Lys Asp Gly Thr Pro
  1               5                  10                  15
Arg Ile Tyr Gln Met Gln Ile Ser Pro Glu Gln His Ser Pro Arg Leu
             20                  25                  30
Leu Thr Lys Lys Tyr Arg Asn Ser Ser Cys Pro Thr Trp Ser Pro Asp
         35                  40                  45
Gly Lys Lys Ile Ala Phe Cys Ser Val Ile Lys Gly Val Arg Gln Ile
     50                  55                  60
Cys Val Tyr Asp Leu Ala Ser Gly Arg Asp Glu Gln Leu Thr Thr Ser
 65                  70                  75                  80
Thr Glu His Lys Glu Ser Pro Ser Trp Ala Ala Asp Ser Asn His Leu
                 85                  90                  95
Val Tyr Ser Ala Gly Ser Ser Asn Thr Ser Glu Leu Phe Leu Leu Ser
            100                 105                 110
Leu Ile Thr Lys Lys Ser Arg Lys Ile Val Ile Gly Ser Gly Glu Lys
        115                 120                 125
Arg Phe Pro Cys Trp Gly Ala Phe Pro Ser Gln His Ile Lys Lys Thr
    130                 135                 140
Ser
145
<210>853
<211>267
<212>PRT
<213>Chlamydia trachomatis
<400>853
Thr Ala Gly Lys Phe Cys Leu Met Lys Gly Ser Val Val Phe Leu Arg
  1               5                  10                  15
Ser Leu Leu Cys Leu Leu Cys Leu Leu Pro Ser Thr Leu His Cys Glu
             20                  25                  30
Asp Leu Glu Ile His Val Arg Ser Glu Ser Ser Leu Leu Pro Ile Ala
         35                  40                  45
Val Ser Leu Leu Ser Ser Pro Lys Asp Ser Arg Gln Ala Ser Tyr Leu
     50                  55                  60
Ala Ser Leu Arg Asp Leu Phe Ala Arg Asp Leu Ala Leu Gly Asp Leu
 65                  70                  75                  80
Leu Ala Pro Thr Lys Glu Leu Ala Pro Gln Thr Ile Phe Ile Glu Ala
                 85                  90                  95
Ser Tyr Pro Glu Leu Ile Phe Ser Leu Lys Lys Glu Gly Lys Gly Ser
            100                 105                 110
Gln Lys Ile Phe Ser Leu Glu Leu Ser Gly Asp Pro Ser Lys Asp His
        115                 120                 125
Gln Ala Ile His Glu Ala Ala Asp Arg Ile His Phe Leu Leu Thr Arg
    130                 135                 140
Val Pro Gly Ile Ser Ser Gly Lys Ile Ile Phe Ser Leu Cys Ala Thr
145                 150                 155                 160
Asn Ser Ser Thr Glu Leu Lys Gln Gly Glu Leu Trp Ser Val Asp Tyr
                165                 170                 175
Asp Gly Gln His Leu Tyr Pro Leu Thr Asn Glu His Ser Leu Ser Val
            180                 185                 190
Thr Pro Thr Trp Met His Ile Ser His Ile Pro Ala Tyr Met Tyr Val
        195                 200                 205
Ser Tyr Lys Leu Gly Val Pro Lys Ile Phe Leu Asn Thr Leu Asn Gln
    210                 215                 220
Pro Ala Gly Lys Lys Ser Leu Leu Cys Lys Gly Ile Ser Leu Cys Arg
225                 230                 235                 240
Leu Ser Leu Leu Lys Leu Asn Ser Ser Pro Leu Phe Leu Ile Glu Thr
                245                 250                 255
Ala Ile Leu Ile Phe Leu Tyr Asn His Ser His
            260                 265
<210>854
<211>264
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<212>PRT
<213>Chlamydia trachomatis
<400>854

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Tyr Ser Phe Gln Thr Val Ser Arg Asp Gln Ile Asp Tyr Arg Arg Ser
  1               5                  10                  15
Arg Ile Ser Gly Thr Ser Tyr Cys Phe Glu Glu Leu Thr Met Pro Lys
             20                  25                  30
Phe Gln Tyr Ala Pro Phe Leu Cys Ala Ser Ile Ile Ile His Ile Ala
         35                  40                  45
Leu Gly Gly Met Leu Phe Phe Ser Ala Pro Gln Lys Lys Lys Pro Arg
     50                  55                  60
Leu Ser Pro Phe Lys Glu Arg Ile Val Ala Leu Pro Pro Glu Pro Lys
 65                  70                  75                  80
Ile Thr Thr Thr Leu Gln Thr Pro Ser Pro Gln Pro Ile Arg Lys Pro
                 85                  90                  95
Val Lys Asn Ala Pro Ala Pro Glu Lys Lys Ala Ala Lys Pro Pro Ala
            100                 105                 110
Ile Ser Asn Pro Gln Lys Ser Pro Gln Lys Pro Asn Lys Ala Ser Pro
        115                 120                 125
Thr Pro Arg Asn Glu Thr Leu Glu Lys Lys Gln Ala Thr Leu Lys Lys
    130                 135                 140
Leu Ala Gln Leu Ala Asn Gln Leu Ala Glu Glu Ala Glu Thr Gln Glu
145                 150                 155                 160
Ser His Ile Ala Gln Phe Ser Trp Pro Ala Gln Ala Gln Val Leu Thr
                165                 170                 175
Glu Asn Thr Ser Tyr Gln Gln Asp Ala Phe Cys Ala Leu Phe Gln Gln
            180                 185                 190
Tyr Val Ser Leu Pro Phe Pro Gly Glu Val Arg Leu Lys Leu Glu Phe
        195                 200                 205
Ser Arg Glu Gly Ala Leu Leu His Cys Ser Ile Leu Ser Thr Ile Ser
    210                 215                 220
His Ala Asp Lys Gln His Ile Leu Asn Gln Ile Gln Lys Ile Pro Phe
225                 230                 235                 240
Gln Ser Phe Phe Ser Ala Tyr Lys Thr Ser Lys Asn Ile Val Phe His
                245                 250                 255
Ile Arg Leu Gln Gly Asn Ser Ala
            260
```

<210>855
<211>136
<212>PRT
<213>Chlamydia trachomatis
<400>855

```
Leu Met Lys Arg Phe Val Tyr Glu Asp Leu Glu Glu Asp Pro Ser Val
  1               5                  10                  15
Asn Leu Thr Pro Leu Ile Asp Ile Val Phe Val Ile Leu Met Ala Phe
             20                  25                  30
Met Ile Ala Met Pro Leu Ile Lys Ile Asp Arg Ile Ser Leu Ala Thr
         35                  40                  45
Gly Ser Ser Ser His Gln Ala Phe Lys Lys Gln Glu Ser Gln Gln Ala
     50                  55                  60
Glu Ile Lys Val Phe Arg Asn His Thr Ile Thr Leu Asn Asp Leu Pro
 65                  70                  75                  80
Val Ser Leu Gln Glu Leu Arg Ser Gln Leu Thr Val Ile His Ala Gln
                 85                  90                  95
His Pro Asn Ile Val Pro Leu Leu Leu Gln Asp Gly Asp Thr Ala Phe
            100                 105                 110
Lys Leu Tyr Gln Glu Ile Lys Ser Thr Ile Glu Glu Ala Gly Phe Gln
        115                 120                 125
Glu Leu His Ile Ala Leu Lys Asn
    130                 135
```

<210>856

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<211>236
<212>PRT
<213>Chlamydia trachomatis
<400>856

```
Val Tyr Val Leu Met Phe Gln Leu Val Asn Asn Pro Ile Ile Gln Ser
  1               5                  10                  15
Phe Gln Glu Ala Asp Leu Phe Gly Lys Val Ile Phe Phe Ser Leu Phe
             20                  25                  30
Ala Leu Ser Ile Cys Thr Trp Thr Val Leu His Gln Lys Leu Ser Ile
         35                  40                  45
Gln Lys Lys Phe Leu Lys Ser Gly Lys Ser Leu Lys Glu Phe Leu Ile
     50                  55                  60
Lys Asn Arg His Ser Pro Leu Ser Leu Asp Ile His Pro Glu Ser Thr
 65                  70                  75                  80
Pro Phe Thr Asp Leu Tyr Phe Thr Ile Lys Arg Gly Thr Leu Glu Leu
                 85                  90                  95
Leu Asp Lys Asn Arg Gln Leu Ala Pro Glu Arg Thr Pro Leu Leu Ser
            100                 105                 110
Val Glu Asp Ile Gln Ser Leu Glu Thr Leu Phe Asn Ala Val Met Pro
        115                 120                 125
Lys Tyr Arg Ala Leu Leu Asn Lys Asn Asn Phe Ile Pro Ala Thr Thr
    130                 135                 140
Ile Ser Leu Ala Pro Phe Leu Gly Leu Leu Gly Thr Val Trp Gly Ile
145                 150                 155                 160
Leu Leu Ala Phe Ala His Ile Ser Thr Gly Gln Ala Asn Gly Thr Ile
                165                 170                 175
Met Met Glu Gly Leu Ala Thr Ala Leu Gly Thr Thr Ile Val Gly Leu
            180                 185                 190
Phe Val Ala Ile Pro Ser Leu Val Gly Phe Asn Tyr Leu Arg Ala His
        195                 200                 205
Ala Phe Gln Val Ser Leu Glu Ile Glu Gln Thr Ala Phe Leu Leu Leu
    210                 215                 220
Asn Ser Ile Glu Val Lys Tyr Arg Gln Thr Ser Leu
225                 230                 235
```

<210>857
<211>221
<212>PRT
<213>Chlamydia trachomatis
<400>857

```
Thr Gly Glu Ser Val Val Phe Met Ile Arg Gln Trp Tyr Gly Phe Phe
  1               5                  10                  15
Leu Cys Leu Leu Phe Ser Tyr Thr Ser Cys Phe Gly Val Glu Glu Asn
             20                  25                  30
Ser Gly Arg Ala Thr Pro Thr Val Glu Leu Val Ser Glu Ser Glu Gln
         35                  40                  45
Ala Val Glu Gly Glu Val Leu Arg Ile Gly Val Leu Ile Ala Ile Pro
     50                  55                  60
Glu Gly Glu His Ile Tyr Trp Lys Asn Pro Gly Lys Leu Gly Met Pro
 65                  70                  75                  80
Leu Arg Ile Ser Trp Asp Leu Pro Ser Gly Cys Arg Leu Leu Glu Glu
                 85                  90                  95
His Trp Pro Thr Pro Glu Ile Phe Glu Glu Asp Gly Val Val Tyr Phe
            100                 105                 110
Gly Tyr Lys His Ser Thr Met Val Val Ala Asp Ile Arg Val Ser Lys
        115                 120                 125
Glu Ile Glu Thr Arg Pro Leu Glu Ile Lys Ala Gln Val Glu Trp Leu
    130                 135                 140
Ser Cys Gly Ala Ser Cys Leu Pro Gly Ser Ser Ser Arg Val Leu Val
145                 150                 155                 160
Ile Pro Ile Asp Gln Gly Pro Leu Ile Pro Asn Ser Lys Glu Thr Phe
                165                 170                 175
```

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Thr Phe Ser Arg Ala Leu Ala Ala Gln Pro Arg Pro Leu Asp Ala Ala
180 185 190
Ile Lys Ile Ser Tyr Gln Pro Asp Gly Leu Asp Val Leu Val Pro Ala
195 200 205
Gly Glu Ser Gly Ser Gly Asn Pro Gly Met Val His Cys
210 215 220
<210>858
<211>497
<212>PRT
<213>Chlamydia trachomatis
<400>858
Met Phe Leu Cys Gln Gln Gly Lys Ala Asp Arg Ala Thr Gln Ala Trp
1 5 10 15
Phe Ile Ala Glu Asn Thr Arg Asp Phe Ala Tyr Ala Gln Glu Val Pro
20 25 30
Leu Glu Gln Ala Thr Thr Tyr Ile Trp Lys Leu Lys His Pro Glu Gly
35 40 45
Asn Met Pro Lys Gly Val Gly Leu Ser Arg Ile Leu Ile Phe Lys Asp
50 55 60
Asp Ala Gly Lys Val Val Ala Ser Tyr Gln Val Glu Xaa Asn Gln Val
65 70 75 80
Glu Gln Leu Ser Ala Leu Ser Trp Gly Phe Leu Ser Ile Leu Leu Met
85 90 95
Ala Phe Ile Gly Gly Ile Leu Leu Asn Ile Met Pro Cys Val Leu Pro
100 105 110
Leu Ile Thr Leu Lys Val Phe Ser Leu Ile Lys Ser Ala Ala Asp His
115 120 125
His Ser Ser Ser Val Ile Gly Gly Ile Trp Phe Thr Leu Gly Ala Ile
130 135 140
Val Ser Phe Trp Gly Leu Ala Phe Cys Ala Phe Leu Leu Lys Val Leu
145 150 155 160
Gly Gln Asn Ile Gly Trp Gly Phe Gln Leu Gln Glu Pro Met Phe Val
165 170 175
Ala Val Leu Ile Ile Val Phe Phe Leu Phe Ala Leu Ser Ser Leu Gly
180 185 190
Val Phe Glu Met Gly Met Ile Cys Leu Ser Leu Gly Glu Lys Leu Gln
195 200 205
Glu Glu Gly Gly Ala Ser Val Arg Lys Asn Gln Ile Trp Gly Ala Phe
210 215 220
Phe Asn Gly Met Leu Thr Thr Leu Val Thr Thr Pro Cys Thr Gly Pro
225 230 235 240
Phe Leu Gly Ser Val Phe Gly Leu Val Met Ala Val Ser Phe Val Lys
245 250 255
Gln Leu Ala Ile Phe Thr Ala Ile Gly Leu Gly Met Ala Ser Pro Tyr
260 265 270
Leu Leu Phe Ala Ser Phe Pro Lys Met Leu Ala Ile Leu Pro Lys Pro
275 280 285
Gly Pro Trp Met Ser Thr Phe Lys Gln Leu Thr Gly Phe Met Leu Leu
290 295 300
Ala Thr Ala Thr Trp Leu Ile Trp Ile Phe Gly Val Glu Thr Ser Ala
305 310 315 320
Thr Ala Val Thr Ile Leu Leu Val Gly Leu Trp Leu Ala Ala Val Gly
325 330 335
Ala Trp Ile Leu Gly Arg Trp Gly Thr Leu Val Ser Pro Arg Asn Gln
340 345 350
Arg Leu Leu Ala Ser Val Val Phe Ile Phe Cys Ile Leu Ser Ser Leu
355 360 365
Val Ile Thr Ser Ile Gly Val Arg Tyr Phe Asp Glu Asn Val Pro Pro
370 375 380
Ala His Ser Phe Asp Trp Gln Ser Phe Ser Pro Glu Lys Leu Ala Asp
385 390 395 400

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```
Leu Arg Glu Lys Gly Ile Pro Val Phe Val Asn Phe Thr Ala Lys Trp
                405                 410                 415
Cys Leu Thr Cys Gln Leu Asn Lys Pro Leu Leu His Ala Asn Met Gln
            420                 425                 430
Ala Phe Ala Ala Lys Gly Val Val Thr Leu Glu Ala Asp Trp Thr Lys
        435                 440                 445
Lys Asp Pro Lys Ile Thr Glu Glu Leu Ala Arg Leu Gly Arg Ala Ser
    450                 455                 460
Val Pro Ser Tyr Val Tyr Tyr Pro Ala Gly Asn Lys Ala Pro Leu Ile
465                 470                 475                 480
Leu Pro Glu Arg Leu Ser Gln Ser Ala Leu Glu Glu Met Val Phe Ser
                485                 490                 495
Gln
```

<210>859
<211>272
<212>PRT
<213>Chlamydia trachomatis
<400>859

```
Leu Arg Lys Ile Asp Tyr Glu Gly Ser Met Glu Ile Val Asp Ala His
  1               5                  10                  15
Val His Leu Ser Ser Glu Glu Phe Ile Glu Asp Phe Gly Asp Val Val
            20                  25                  30
Leu Arg Gly Lys Thr Ala Gly Val Thr Arg Val Val Asn Val Thr Thr
        35                  40                  45
Thr Lys Ala Glu Leu Leu Arg Ser Phe Ala Tyr Ala Glu Ala Tyr Pro
    50                  55                  60
Asp Trp Met Phe Tyr His Val Ala Gly Thr Pro Pro Gln Asp Ala Gln
65                  70                  75                  80
Asp Asp Ile Glu Glu Asp Phe Gln Glu Phe Cys Arg Ala Ala Glu Asp
                85                  90                  95
Gly Lys Leu Ala Ala Ile Gly Glu Val Gly Leu Asp Tyr Leu Phe Ala
            100                 105                 110
Val Gln Ala Ser Glu Gln Glu Arg Gln Lys Glu Val Leu Cys Arg Tyr
        115                 120                 125
Leu Gln Leu Ala Leu Gln His Glu Leu Pro Leu Val Val His Cys Arg
    130                 135                 140
Gly Ala Phe Glu Asp Phe Phe His Ile Leu Asp His Val Tyr Arg Val
145                 150                 155                 160
Asp Gln Arg Ala Lys Pro Gly Met Leu His Cys Phe Thr Gly Thr Tyr
                165                 170                 175
Glu Glu Ala Thr Glu Leu Leu Ala Arg Asp Trp Tyr Ile Ser Ile Ser
            180                 185                 190
Gly Ile Val Thr Phe Lys Asn Ala Lys Ser Leu Gln Asp Leu Val Glu
        195                 200                 205
Lys Ile Pro Leu Glu Arg Leu Leu Val Glu Thr Asp Ala Pro Tyr Leu
    210                 215                 220
Ala Pro Thr Pro Leu Arg Gly Lys Arg Asn Glu Pro Ala Asn Ile Val
225                 230                 235                 240
His Thr Leu Ala Arg Ile Ala Glu Ile Lys Gly Ile Ser Val Tyr Glu
                245                 250                 255
Leu Gln Asp Ala Val Ser Thr Asn Val Gln Arg Trp Leu Arg Gly Ser
            260                 265                 270
```

<210>860
<211>214
<212>PRT
<213>Chlamydia trachomatis
<400>860

```
Leu Phe Arg Leu Val Phe Ile Pro Ser Ser Asp Leu Ala Ile Phe Phe
  1               5                  10                  15
Glu Gly Glu Arg Ile Phe Ser Leu Gln Met Glu Glu His Leu Arg Tyr
```

86054-16-72-20-05

```
                20                  25                  30
Gly Arg Asn Leu Ala Tyr Thr Leu Gln Arg Met Thr Ala Trp Ile Leu
            35                  40                  45
Leu Ala Gly Leu Ala Phe His Val Ile Gln Phe Arg Phe Val Leu Tyr
        50                  55                  60
Pro Ile Gln Val Thr Ile Gln Gly Lys Thr Phe Tyr Ala Val Ser Phe
 65                  70                  75                  80
Asp Ala Ala Arg Tyr Pro Ser Val Val Gln Gly Thr Thr Gly Phe Phe
                85                  90                  95
Ile Met Asn Val Pro Phe Ala Glu Gly Gly Pro Gln Ile Thr Glu Gln
            100                 105                 110
Phe Leu Gln Glu Lys Asp Arg Ala Leu Phe Ala Ser His Lys Ser Tyr
        115                 120                 125
Ile Phe Thr Pro Glu Ala Arg Lys Ala Phe Leu Tyr Ala Val Arg Asn
    130                 135                 140
Ala Leu Gly Ser Leu Trp Met Ala Ile Phe Tyr Thr Leu Phe Val Ile
145                 150                 155                 160
Ala Ala Val Phe His Gly Phe Asn Gly Val Trp Thr Phe Val Ser Arg
                165                 170                 175
Trp Gly Ile Ile Ile Ser Ser Arg Tyr Leu Arg Leu Cys Gln Ile Leu
            180                 185                 190
Cys Tyr Val Gly Met Cys Val Val Met Ala Met Gly Ile Ser Val Ile
        195                 200                 205
Trp Asn Met Tyr Leu Leu
    210
<210>861
<211>423
<212>PRT
<213>Chlamydia trachomatis
<400>861
Trp Ser Met Asp Val Cys Leu Ala Met Gly Asn His Tyr Leu Phe Pro
  1                 5                  10                  15
Leu Ser Pro Ile Met Ser Asp Leu Met Leu Arg Arg Asp Val Cys Cys
            20                  25                  30
Asp Gly Tyr Gly Tyr Gln Arg Asn Leu Glu Tyr Val Phe Val Met Met
        35                  40                  45
Asn Gln Arg Cys Arg Val Ile Ile Ile Gly Gly Gly Leu Ala Gly Leu
    50                  55                  60
Ser Ala Ala Met Gln Leu Ala Asp Arg Gly Ile Leu Val Glu Leu Phe
 65                  70                  75                  80
Ser Leu Thr Lys Val Lys Arg Ser His Ser Val Cys Ala Gln Gly Gly
                85                  90                  95
Ile Asn Ala Ala Leu Asn Leu Lys Gly Glu Asn Asp Ser Pro Tyr Ile
            100                 105                 110
His Ala Tyr Asp Thr Ile Lys Gly Gly Asp Phe Leu Ala Asp Gln Pro
        115                 120                 125
Pro Val Leu Glu Met Cys Leu Thr Ala Ser Arg Ile Ile His Met Leu
    130                 135                 140
Asp Arg Phe Gly Cys Pro Phe Asn Arg Asp Ala Asp Gly Asn Leu Asp
145                 150                 155                 160
Val Arg Arg Phe Gly Gly Thr Leu Tyr His Arg Thr Val Phe Cys Gly
                165                 170                 175
Ala Ser Thr Gly Gln Gln Leu Met Tyr Thr Met Asp Glu Gln Val Arg
            180                 185                 190
Arg Arg Glu Trp Gln Gly Lys Ile Ile Lys Arg Glu Asn His Glu Phe
        195                 200                 205
Val Arg Leu Ile Thr Asn Thr Glu Gly Arg Ala Cys Gly Val Val Val
    210                 215                 220
Met Asn Leu Phe Asn His Arg Leu Glu Val Ile Gln Gly Asp Ala Val
225                 230                 235                 240
Ile Ile Ala Thr Gly Gly Leu Gly Val Ile Phe Gln Met Ser Thr Asn
```

```
                245                 250                 255
Ser Thr Ile Cys Thr Gly Ala Ala Asn Gly Arg Leu Phe Met Gln Gly
            260                 265                 270
Met His Tyr Ala Asn Pro Glu Phe Ile Gln Ile His Pro Thr Ala Ile
        275                 280                 285
Pro Gly Leu Asp Lys Leu Arg Leu Ile Ser Glu Ser Val Arg Gly Glu      290
295             300
Gly Gly Arg Val Trp Val Pro Arg Cys Ser Ser Lys Thr Ile Ile Phe
305             310                 315                 320
Pro Asp Gly Ser Arg Arg Pro Cys Gly Glu Thr Gly Lys Pro Trp Tyr
                325                 330                 335
Phe Leu Glu Glu Met Tyr Pro Ala Tyr Gly Asn Leu Val Ser Arg Asp
            340                 345                 350
Val Gly Ala Arg Ala Ile Leu Gln Val Cys Glu Ala Gly Leu Gly Ile
        355                 360                 365
Asp Gly Arg His Glu Val Phe Leu Asp Val Thr His Leu Pro Val Glu
    370                 375                 380
Thr Leu Asn Lys Leu Glu Ala Val Leu Asp Ile Tyr His Lys Phe Thr
385             390                 395                 400
Gly Glu Asp Pro Lys Lys Val Pro Met Arg Ile Phe Leu Arg Cys Thr
                405                 410                 415
Ile Leu Trp Glu Ala Pro Gly
            420
<210>862
<211>267
<212>PRT
<213>Chlamydia trachomatis
<400>862
Lys Ser Pro Tyr Ala His Phe Ser Ala Val His Tyr Ser Met Gly Gly
  1               5                  10                  15
Ala Trp Val Asp Trp Pro Ala Ser Asp Asp Arg Asp Arg Asp Ser Arg
             20                  25                  30
Tyr Arg His Met Thr Asn Ile Pro Gly Cys Phe Asn Cys Gly Glu Ser
         35                  40                  45
Asp Phe Gln Tyr His Gly Ala Asn Arg Leu Gly Ala Asn Ser Leu Leu
     50                  55                  60
Ala Cys Leu Tyr Ala Gly Leu Val Ala Gly Asp Glu Ala Ala Arg Phe
 65                  70                  75                  80
Val Glu Ser Phe Gly Ser Cys Ile Tyr Ser Gln Gln Asp Leu Asn Gln
                 85                  90                  95
Ala Leu Gln Gln Glu Gln Glu Ile Ser Arg Glu Ile Leu Ser Arg Gln
            100                 105                 110
Gly Gly Glu Asn Ala Phe Ala Leu His Glu Glu Ile Ala Arg Val Met
        115                 120                 125
Val Ser Asn Val Thr Val Lys Arg Glu Asn Lys Ala Leu Glu Glu Thr
    130                 135                 140
Leu His Lys Leu Lys Glu Phe Arg Glu Arg Ile Lys Lys Val Ser Val
145             150                 155                 160
His Asp Ser Ser Arg Phe Ala Asn Lys Thr Phe His Phe Val Arg Gln
                165                 170                 175
Met Glu Pro Met Leu Glu Leu Ala Leu Ala Ile Thr Thr Gly Ala Leu
            180                 185                 190
Leu Arg Asn Glu Phe Arg Gly Ser His Tyr Lys Pro Glu Phe Ser Lys
        195                 200                 205
Arg Asp Asp Val Asn Trp Leu Lys Thr Thr Ile Ala Thr Tyr Ser Val
    210                 215                 220
Asp Glu Pro Glu Ile Ser Tyr Lys Lys Val Asp Thr Arg His Val Asn
225             230                 235                 240
Pro Glu Leu Arg Asp Tyr Thr Arg Gln Gly Ala Lys Asp Val Val Leu
                245                 250                 255
Glu Asn Ile Pro Ala Asn Ile His Phe Pro Ile
```

260 265

<210>863
<211>182
<212>PRT
<213>Chlamydia trachomatis
<400>863

```
Tyr Trp Glu Ser Phe Glu Leu Glu Leu His Pro Gly Glu Asn Val Ile
  1               5                  10                  15
Ser Ala Leu Met Glu Ile Glu Lys Asn Pro Val Asn Ile His Gly Glu
            20                  25                  30
Arg Val Asp Pro Val Val Trp Glu Gln Ala Cys Leu Glu Glu Val Cys
        35                  40                  45
Gly Ser Cys Ala Val Leu Val Asn Gly Ile Pro Arg Gln Ala Cys Thr
    50                  55                  60
Ala Leu Ile His Glu His Met Asp Ala Lys Arg Glu Ile Lys Leu Ala
65                  70                  75                  80
Pro Leu Ser Lys Phe Pro Leu Val Arg Asp Leu Ile Val Asp Arg Ser
                85                  90                  95
Val Met Phe Lys Asn Leu Glu Glu Ile Gln Gly Trp Ile Ser Ala Glu
            100                 105                 110
Lys Cys Gly Glu Gly Ala Gly Pro Lys Ile Ser Gln Glu Glu Gln Thr
        115                 120                 125
Leu Met Tyr Ser Leu Ser Met Cys Met Thr Cys Gly Cys Cys Thr Glu
    130                 135                 140
Ala Cys Pro Gln Val Asn Glu Lys Ser Asp Phe Met Gly Pro Ala Ala
145                 150                 155                 160
Ile Gly Lys Arg Val Ile Leu Thr Leu Ile Leu Glu Arg Asn Val Glu
                165                 170                 175
Arg Val Gly Tyr Glu His
            180
```

<210>864
<211>155
<212>PRT
<213>Chlamydia trachomatis
<400>864

```
Leu Ala Asn Phe Leu Ala Ile Ala Arg Phe Phe Phe Ala Lys Ala Thr
  1               5                  10                  15
Leu Leu Tyr Val Val Lys Ser Cys Arg Phe Ser Pro His Lys Thr Ser
            20                  25                  30
Ser Ser Lys Glu Ala Phe Ser Leu Leu Ala Lys Glu Ser Asn Thr Glu
        35                  40                  45
Thr Ser Lys Arg Asp Met Thr Lys Lys Gly Val Phe Ser Leu Pro Leu
    50                  55                  60
Pro Trp Asn Lys Ile Ala Met Gln Ser Ser Lys Leu Lys Ser Pro His
65                  70                  75                  80
Leu Gln Lys Thr Leu Cys Tyr Ser Ser Val Phe Phe Leu Asn Asn Glu
                85                  90                  95
Glu Asn Asn Ala Arg Lys Glu Lys Arg Glu Thr Ser His Pro Ile Ala
            100                 105                 110
Glu Met Leu Ser Val Lys Gly Asn Phe Leu Gly His Thr Arg Thr Gln
        115                 120                 125
Leu Trp Ala Cys Pro Asp Pro Ser Ile Pro Arg Val Pro Ile Asn Ala
    130                 135                 140
Arg Asn Arg Leu Ser Arg Arg Phe Ser Pro Gly
145                 150                 155
```

<210>865
<211>986
<212>PRT
<213>Chlamydia trachomatis
<400>865

```
Gln Arg Val Phe Trp Arg Trp Gly Leu Leu Ser Phe Glu Asp Cys Ile
```

09/538,744 - 03/30/00

Sequence Listing

```
  1               5                  10                  15
Ala Ile Leu Phe His Gly Lys Gly Arg Glu Lys Thr Pro Phe Phe Val
            20                  25                  30
Met Ser Arg Leu Asp Val Ser Val Phe Asp Ser Leu Ala Asn Lys Glu
        35                  40                  45
Lys Ala Ser Leu Leu Glu Glu Val Leu Cys Gly Glu Asn Leu Gln Asp
    50                  55                  60
Phe Thr Thr Tyr Ser Lys Val Ala Leu Ala Lys Lys Asn Leu Ala Ile
65                  70                  75                  80
Ala Arg Lys Leu Ala Ser Tyr Ile Leu Asn Glu Glu Gly Asp Leu Glu
                85                  90                  95
Leu Ser Arg Val Val Glu Ser Ile Gln Leu Leu Thr Lys Cys Leu Tyr
            100                 105                 110
Pro Leu Gly Pro Tyr Arg Gln Gly Glu Gly Pro Ile Arg Glu His Val
        115                 120                 125
Leu Lys Met Leu Glu Phe Leu Arg Asp Asp Gln Glu Ile Lys Asn Arg
    130                 135                 140
Phe Arg Arg Phe Phe Val Pro Ser Tyr Ala Arg Val Gln Asp Leu Ile
145                 150                 155                 160
Arg Asn Thr Leu Ala Leu Pro Ala Ser Glu Thr Val Thr Val Arg His
                165                 170                 175
Val Arg Glu Ala Ala Leu Val Ala Leu Phe Thr Tyr Leu Arg Gln Asp
            180                 185                 190
Val Gly Ser Cys Phe Ala Thr Ala Leu Ala Ile Leu Ile His Arg Glu
        195                 200                 205
Tyr Pro Leu Leu Phe Ile Arg Asp Leu Glu Asp Leu Leu Ser Ser Gly
    210                 215                 220
Lys Ile Ser Arg Ile Val Gly Asp Arg Glu Ile Ser Val Pro Ile Asn
225                 230                 235                 240
Leu Leu Pro Cys Val Gly Asp Leu Phe Lys Pro Ile Cys Val Met Asp
                245                 250                 255
Leu Tyr Pro Asn Pro Val Ala Thr Leu Ala Ala Ser Ser Asp Leu Gln
            260                 265                 270
Ala Ala Phe Val Ala Ser Gly Ile Phe Pro Thr Thr Gly Asp Ile Ala
        275                 280                 285
Gly Glu Val Gln Thr Leu Leu Ala Asn Glu Phe Ile Tyr Gln Lys Val
    290                 295                 300
Gln Asp Ile His Gly Lys Ile Thr Ala His Asp Val Ile Gln Asp Ser
305                 310                 315                 320
Leu Leu His His Tyr Gln Leu Ser Leu Ser Thr Val Gln Ala Ser Val
                325                 330                 335
Leu Gln Glu Gly Phe Arg Lys Glu Arg Gly Asp Gly Thr Val Leu Leu
            340                 345                 350
Ser Thr Asn Ser Gln Arg Val Leu Ser Tyr Leu Glu Ser Tyr Glu Gln
        355                 360                 365
Ala Lys Leu Gly Phe Ile Arg Asp Thr Gln Asn Val Leu Leu Lys Ser
    370                 375                 380
Trp Glu Tyr Thr Leu Ala Thr Leu Ala Asp Ala Ser Gln Thr Thr Thr
385                 390                 395                 400
Thr Lys His Leu Gln Ile Ala Leu Gly Trp Thr Ser Asp Asp Glu Asp
                405                 410                 415
Gly Leu Arg Glu Ile Ile Arg Arg Phe Leu Ala Glu Glu Val Ala Thr
            420                 425                 430
Thr Gln Ala Phe Ala Gly Gln Cys Glu Glu Thr Tyr Gln Glu Ala Lys
        435                 440                 445
Ala Gln Leu Glu Tyr Val Glu Ser Arg Met Arg Asn Pro Ile Asn Lys
    450                 455                 460
Gln Asp Ser Gln Ile Leu Ala Met Asp His Val Arg Phe Arg Gln Glu
465                 470                 475                 480
Leu Asn Gln Ala Leu Gln Asp Trp Asn Ala Ala Gln Glu Lys Leu Lys
                485                 490                 495
```

```
Lys Met Ile Met Leu Pro Asp Phe Leu Leu Ser Phe Tyr Ser Arg Glu
                500                 505                 510
Ile Pro Asn Tyr Phe Arg Ser Val Tyr Asp Ala Phe Ile Arg Glu Phe
            515                 520                 525
Ser Gly Asn Tyr Gln Asp Val Pro Ala Gly Phe Arg Ile Leu Phe Thr
        530                 535                 540
Tyr Gly Arg Ser His Pro Asn Thr Trp Glu Pro Ile Tyr Ser Ile Glu
545                 550                 555                 560
Glu Phe Ile His Ala Leu Thr Glu Phe Phe Thr Ser Ile Glu Gly Asp
                565                 570                 575
Leu Leu Ala Lys His Asn Val Ser Gly Leu Glu Lys Glu Thr Ser Ile
            580                 585                 590
Leu Leu His Arg Ile Val Ser Ala Leu His Glu Pro Arg Phe Gln Glu
        595                 600                 605
Ala Ala Met Glu Arg Ile Leu Lys Ala Tyr Asn Cys Pro Ile Pro Gln
    610                 615                 620
Gly Ile Phe Gln His Leu Asp Gln Val Thr His Thr Pro Trp Val Tyr
625                 630                 635                 640
Val Ser Gly Gly Thr Val Thr Thr Leu Val Gly Asp Tyr Phe Glu Asn
                645                 650                 655
Ser Lys Pro Leu Val Lys Leu Glu Lys Leu Pro Ala Asp Pro His Glu
            660                 665                 670
Leu Ala Ala Phe Phe Ala Asp Ala Leu Lys Asp Leu Pro Glu Ala Val
        675                 680                 685
Lys Asp Tyr Val Glu Asn Gly Asp His Ser Leu Leu Ala Ala Ala Pro
    690                 695                 700
Ser His Val Phe Ser Val Thr Ala Gly Ala Pro Leu Phe Arg Asp Ala
705                 710                 715                 720
Trp Thr Asn Asp Trp Tyr Ser Tyr Thr Trp Leu Arg Asp Val Trp Leu
                725                 730                 735
Ser Lys His Gln Asp Phe Leu Lys Arg Thr Leu Phe Asp Lys Ser Ala
            740                 745                 750
Ile Tyr Ala Phe Ile Thr Arg Phe Cys Thr Arg Tyr Tyr Leu Gln Glu
        755                 760                 765
Leu Thr Gln Asp Leu Leu Tyr Phe Cys Asp Asp Leu Ser Leu Ser Ile
    770                 775                 780
Pro Glu Phe Tyr Glu Lys Ser Ser Arg Phe Phe Gln Ser Thr Val His
785                 790                 795                 800
Asp Glu Lys Val Val Ala Thr Leu Gln Lys Tyr Leu Ala Ser Gln Phe
                805                 810                 815
Val His Glu Ala Pro Tyr Val Ser Glu Gln Gln Leu Pro Gln Ile Ile
            820                 825                 830
Ser Asp Leu Ser Ser Tyr Leu Gly Ile Ser Ser Arg Ile Ser Tyr Asp
        835                 840                 845
Gln Leu Ala Thr Leu Leu Glu Glu Asn Val Gly Lys His Ser Leu Leu
    850                 855                 860
Ser Ser Ser Asp Leu Arg His Leu Tyr Lys Gly Leu Leu Met Ala Gly
865                 870                 875                 880
Tyr Gln Arg Val Tyr His Glu Glu Asp Leu Ser Met Arg Leu Ile Ala
                885                 890                 895
Ala Met Arg His Tyr Gly Leu Ala Tyr Pro Ala Pro Leu Leu Phe Gly
            900                 905                 910
Asp Thr Asn Trp Ala Tyr Arg Tyr Phe Gly Phe Ile Xaa His Pro Gly
        915                 920                 925
Thr Gln Glu Met Asp Leu Trp Glu Phe Asn Tyr Leu Gly Leu Val Gly
    930                 935                 940
Arg Pro Ser Glu Asn Lys Glu Arg Trp Phe Ala Val Arg Asp Pro Trp
945                 950                 955                 960
Ala Leu Tyr Pro Glu Ser His Arg Leu Arg Asn Gly Pro Ser Thr Arg
                965                 970                 975
Leu Ser Lys Trp Ile Ala Glu Arg Phe Phe
```

980 985

<210>866
<211>112
<212>PRT
<213>Chlamydia trachomatis
<400>866

```
Ile Asn Ser Leu Ala Ser Ser Val Cys Thr Ser Pro Ala Ile Ser Pro
  1               5                  10                  15
Val Val Gly Asn Met Pro Glu Ala Thr Asn Ala Ala Cys Lys Ser Asp
             20                  25                  30
Glu Ala Ala Arg Val Ala Thr Gly Leu Gly Tyr Lys Ser Ile Thr Gln
         35                  40                  45
Ile Gly Leu Asn Lys Ser Pro Thr His Gly Arg Arg Leu Ile Gly Thr
     50                  55                  60
Glu Ile Ser Arg Ser Pro Thr Ile Arg Asp Ile Phe Pro Glu Asp Asn
 65                  70                  75                  80
Lys Ser Ser Lys Ser Arg Ile Asn Asn Asn Gly Tyr Ser Arg Trp Ile
                 85                  90                  95
Arg Ile Ala Asn Ala Val Ala Lys Gln Asp Pro Thr Ser Cys Arg Lys
            100                 105                 110
```

<210>867
<211>609
<212>PRT
<213>Chlamydia trachomatis
<400>867

```
Asn Ile Cys Phe Arg Cys Gly Met Arg Gln Thr Phe Thr Lys Arg Ile
  1               5                  10                  15
Leu Leu Phe Leu Phe Leu Val Ile Pro Ala Pro Leu Leu Leu Asn Leu
             20                  25                  30
Val Val Leu Ser Phe Phe Ser Phe Ala Ala Val Lys Thr Thr Ile Ile
         35                  40                  45
Gln Asp Leu His Thr Arg Thr Met Asn Phe Asn Leu Glu Leu Glu Lys
     50                  55                  60
Lys Ile Ala Ile Gln Asn Ile Phe Leu Lys Arg Leu Ala Glu Thr Leu
 65                  70                  75                  80
Ala Leu Lys Thr Leu Thr Thr Ser His Asp Phe Phe Thr Glu Ala Tyr
                 85                  90                  95
Ser Glu Met Ile Ala Leu Gly Asp Thr Asp Leu Ser Leu Cys Leu Leu
            100                 105                 110
Ser Ser Ala Asn Asp Ser Ile Arg Thr Lys Asn Pro Arg Asp Pro Phe
        115                 120                 125
Val Arg Tyr Ile Lys Ala His Pro Glu Ile Arg Asp Lys Leu Ile Gln
    130                 135                 140
Asn Pro Gly Asn Ala Ser Leu Ile Ser Ile Ser Glu Arg Pro Asp Thr
145                 150                 155                 160
Glu Asp His Tyr Leu Val Phe Ala Glu Pro Leu Pro Ile Tyr Glu Asp
                165                 170                 175
Pro Ser Leu Ala Gly Trp Val Ile Ala Phe Tyr Ser Met Gln Lys Leu
            180                 185                 190
Arg Asn Tyr Leu Phe His Asn Lys Gln Ser Tyr Gln Asp Leu Leu Cys
        195                 200                 205
Tyr Leu Asn His Lys Gly Glu Leu Leu Phe Ser Asp Ser Ser Pro Phe
    210                 215                 220
Gln Asn Gly Ala Phe Ser Leu Ser Met Glu Gly Tyr Pro Ala Leu Ser
225                 230                 235                 240
Ser Glu Lys Ala Ser Tyr Pro Leu Glu Pro Ser Pro Glu Leu Phe Lys
                245                 250                 255
Ala Lys Glu Leu Leu Lys Val Ser Asn Thr Arg Glu Asn Phe Leu Ser
            260                 265                 270
Leu Phe Ile Ser Leu Ala Ala Tyr Thr Thr Tyr Pro Phe Ser Cys Ala
        275                 280                 285
```

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```
Asp Pro Ser Ile His Leu His Tyr Thr Ser Leu Arg Leu Pro Ile Asn
    290                 295                 300
Val Ile Leu Phe Tyr Ile Leu Ala Phe Ser Leu Met Gly Trp Val Leu
305                 310                 315                 320
Ser Cys Thr Ser Lys Arg Leu Asn Arg Pro Leu Gln Glu Leu Ser Val
                325                 330                 335
Ser Met Glu Ser Ala Trp Lys Gly Asn His Asn Val Arg Tyr Glu Pro
            340                 345                 350
Gln Pro Tyr Gly Tyr Glu Ile Asn Glu Leu Gly Asn Ile Phe Asn Cys
        355                 360                 365
Thr Leu Leu Leu Leu Leu Asn Val Lys Glu Lys Ala Glu Ile Glu Tyr
    370                 375                 380
Ile Ser Gly Asn Leu Leu Gln Lys Glu Leu Ala Leu Leu Ser Ser Leu
385                 390                 395                 400
Lys Asp Thr Leu Leu Cys Gln Arg Ser Asn Ser Leu Pro Gly Gly Thr
                405                 410                 415
Phe Ser Leu His Tyr Leu Gln Gly Glu Gln Gln Thr Gly Tyr Phe Tyr
            420                 425                 430
Gly Trp Val Ala Thr Pro Glu Lys Asp Arg Leu Phe Gly Val Ile Gly
        435                 440                 445
Ile Ala Gly Asp Ile Gly Leu Pro Ser Tyr Leu Tyr Ala Leu Ser Ala
    450                 455                 460
Arg Ser Leu Phe Leu Thr Tyr Ala Ser Leu Gly Tyr Ser Leu Pro Ser
465                 470                 475                 480
Ile Cys His Lys Thr Met Arg Ser Phe Asp Glu Thr Thr Val Gly Asn
                485                 490                 495
Glu Ala Ser Val Ser Ile Ala Cys Leu Glu Tyr Asp Leu Ser Ser Lys
            500                 505                 510
Ser Leu Ser Val Leu Thr Glu Gly Ala Asn Pro Pro Thr Leu Phe Ile
        515                 520                 525
Lys Arg Gln Glu His Leu Leu Thr Met Ser Glu Gln Gln Arg Ile Glu
    530                 535                 540
Thr Gly Asp Ile Leu Val Cys Leu Thr Gly Gly Pro His Ile Ile Gln
545                 550                 555                 560
Tyr Leu Lys Thr Leu Pro Ile Glu Ala Leu Leu Lys Asp Pro Leu Ala
                565                 570                 575
Pro Leu Asn Ser Lys Asn Phe Ala Glu Met Leu Thr Thr Met Leu Arg
            580                 585                 590
Ser Lys Asn Gln Thr Gln Ile Asp Gly Ala Val Gly Phe Leu Ser Phe
        595                 600                 605
Ile
```

<210>868
<211>658
<212>PRT
<213>Chlamydia trachomatis
<400>868

```
Ala Pro Leu Gly Lys Lys Arg Glu Met Thr Ile Pro Ile His Glu Asn
  1               5                  10                  15
Lys Tyr Ser Met Ile Ser Phe Thr Arg Thr Ile Gly Phe Arg Leu Trp
            20                  25                  30
Leu Ile Cys Val Ala Ala Ile Met Phe Pro Leu Gly Ile Asn Ile Leu
        35                  40                  45
Gln Leu Asn Leu Gln Gln Tyr Lys Lys Thr Leu Ser Ser Ile Thr Ser
    50                  55                  60
Asp Leu Arg Glu Asn Ala Leu Phe Lys Ala His Thr Leu Gln Gln Thr
65                  70                  75                  80
Ile Pro Leu Asn Ile Asp Ile Leu Ala Leu Phe Ser Glu Ile Phe Asp
                85                  90                  95
Leu Asp Arg Gly Val Pro Ala Glu Pro Asp Leu Ala Leu Ser Lys Glu
            100                 105                 110
```

```
Met Glu Lys Ile Phe His Ser Thr Tyr Lys Glu Ile Ser Leu Val Lys
        115                 120                 125
Lys Glu Ala Asp Gly Asn Phe Arg Val Val Ala Ser Ser Arg Ile Glu
    130                 135                 140
Gln Leu Gly Lys Asn Tyr Asn Gln Glu Ile Phe Leu Ser Asp Ser Gln
145                 150                 155                 160
Pro Phe Leu Ala Thr Leu Arg His Ser Gly Ser Asp Ser Gln Val Leu
                165                 170                 175
Ala Val Leu Gln Thr Asn Ile Phe Asp Ile Ser Ser Gln Glu Val Leu
            180                 185                 190
Gly Val Leu Tyr Thr Leu Ser Asp Thr Asn Tyr Leu Leu Asn Gly Leu
        195                 200                 205
Leu Ala Ala Lys Asp Pro Leu Ser Val Lys Thr Ala Ile Leu Ser Lys
    210                 215                 220
Asn Gly Ile Ile Leu Gln Ala Thr Asp Ser Ser Leu Asp Leu Val Ser
225                 230                 235                 240
Ile His Lys Thr Val Ser Lys Glu Gln Phe Cys Asp Val Phe Leu Arg
                245                 250                 255
Asp Asp Ile Cys Pro Pro His Leu Leu Leu Arg Pro Pro Leu Asn Leu
            260                 265                 270
Asp Pro Leu Pro Tyr Gly Glu Asn Phe Val Ser Phe Cys Ile Gly Asn
        275                 280                 285
Thr Glu Met Trp Gly Tyr Ile His Ser Leu Pro Glu Met Asp Phe Arg
    290                 295                 300
Ile Leu Thr Tyr Glu Glu Lys Ser Ile Ile Phe Ala Ser Leu Trp Arg
305                 310                 315                 320
Arg Thr Leu Leu Tyr Phe Ala Tyr Phe Cys Cys Val Leu Leu Gly Ser
                325                 330                 335
Ile Thr Ala Phe Leu Val Ala Lys Arg Leu Ser Lys Pro Ile Arg Lys
            340                 345                 350
Leu Ala Thr Ala Met Met Glu Thr Arg Arg Asn Gln His His Pro Tyr
        355                 360                 365
Glu Pro Asp Ser Leu Gly Phe Glu Ile Asn His Leu Gly Glu Ile Phe
    370                 375                 380
Asn Ser Met Val Gln Ser Leu Ser Gln Gln Gln Ser Leu Ala Glu Lys
385                 390                 395                 400
Asn Phe Glu Ile Lys Gln His Ala Gln Asn Ala Leu Arg Leu Gly Glu
                405                 410                 415
Glu Ala Gln Gln Arg Leu Leu Pro Asn Gln Leu Pro Asp Ser Ala Thr
            420                 425                 430
Thr Glu Ile Ala Lys Ala Tyr Ile Pro Ala Val Thr Val Gly Gly Asp
        435                 440                 445
Phe Phe Asp Ile Phe Val Ile Gly Glu Gly Pro Gln Ala Lys Leu Phe
    450                 455                 460
Leu Ile Val Ala Asp Ala Ser Gly Lys Gly Val Asn Ala Cys Ala Tyr
465                 470                 475                 480
Ser Leu Phe Leu Lys Asn Met Leu His Thr Phe Leu Ser Glu Leu Ser
                485                 490                 495
Ser Ile Gln Glu Ala Val Gln Gln Thr Ala Ala Leu Phe Tyr Gln Gln
            500                 505                 510
Thr Ala Glu Ser Gly Met Phe Val Thr Leu Cys Ile Tyr Cys Tyr His
        515                 520                 525
Tyr Ala Thr Arg Glu Leu Glu Tyr Tyr Ser Cys Gly His Asn Pro Ala
    530                 535                 540
Cys Leu Arg Ala Pro Asn Gly Asp Ile Ser Phe Leu Ser His Pro Gly
545                 550                 555                 560
Met Ala Leu Gly Phe Leu Pro Glu Val Pro Pro His Pro Ala Tyr Thr
                565                 570                 575
Leu Val Leu Glu Glu Glu Ser Leu Leu Val Leu Tyr Thr Asp Gly Val
            580                 585                 590
Thr Glu Ala Ser Asn Lys His Gly Glu Met Phe Gly Glu Glu Arg Leu
```

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595 600 605
Lys Ala Leu Val Ala Ser Leu Thr Lys Gln Ser Ala Glu Glu Ala Ile
610 615 620
Gln Ser Ile Met Phe Ser Ile Lys Ser Phe Val Lys Asp Cys Pro Gln
625 630 635 640
His Asp Asp Ile Thr Leu Leu Val Leu Lys Ile Pro Lys Glu Pro Ser
645 650 655
Ala Tyr

<210>869
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20 25 30
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35 40 45
Phe Asp Val Val Ile Ser Asp Ile Glu Ala Arg Glu Ile Leu Asp Ser
50 55 60
Arg Gly Tyr Pro Thr Leu Cys Val Lys Val Ile Thr Asn Thr Gly Thr
65 70 75 80
Phe Gly Glu Ala Cys Val Pro Ser Gly Ala Ser Thr Gly Ile Lys Glu
85 90 95
Ala Leu Glu Leu Arg Asp Lys Asp Pro Lys Arg Tyr Gln Gly Lys Gly
100 105 110
Val Leu Gln Ala Ile Ser Asn Val Glu Lys Val Leu Val Pro Ala Leu
115 120 125
Gln Gly Phe Ser Val Phe Asp Gln Ile Thr Ala Asp Ala Ile Met Ile
130 135 140
Asp Ala Asp Gly Thr Pro Asn Lys Glu Lys Leu Gly Ala Asn Ala Ile
145 150 155 160
Leu Gly Val Ser Leu Ala Phe Ser Lys Ser Cys Leu Gln Ile Leu Tyr
165 170 175
Arg Asp Leu Leu Tyr Arg Tyr Leu Gly Gly Ser Phe Ser His Val Leu
180 185 190
Pro Cys Pro Met Met Asn Leu Ile Asn Gly Gly Met His Ala Thr Asn
195 200 205
Gly Leu Gln Phe Gln Glu Phe Met Ile Arg Pro Ile Ser Ala Pro Ser
210 215 220
Leu Lys Glu Ala Val Arg Met Gly Ala Glu Val Phe Asn Ala Leu Lys
225 230 235 240
Lys Ile Leu Gln Asn Arg Gln Leu Ala Thr Gly Val Gly Asp Glu Gly
245 250 255
Gly Phe Ala Pro Asn Leu Ala Ser Asn Ala Glu Ala Leu Asp Leu Leu
260 265 270
Leu Thr Ala Ile Glu Thr Ala Gly Phe Thr Pro Arg Glu Asp Ile Ser
275 280 285
Leu Ala Leu Asp Cys Ala Ala Ser Ser Phe Tyr Asn Thr Gln Asp Lys
290 295 300
Thr Tyr Asp Gly Lys Ser Tyr Ala Asp Gln Val Gly Ile Leu Ala Glu
305 310 315 320
Leu Cys Glu His Tyr Pro Ile Asp Ser Ile Glu Asp Gly Leu Ala Glu
325 330 335
Glu Asp Phe Glu Gly Trp Lys Leu Leu Ser Glu Thr Leu Gly Asp Arg
340 345 350
Val Gln Leu Val Gly Asp Asp Leu Phe Val Thr Asn Ser Ala Leu Ile
355 360 365
Ala Glu Gly Ile Ala Gln Gly Leu Ala Asn Ala Val Leu Ile Lys Pro

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    370                 375                 380
Asn Gln Ile Gly Thr Leu Thr Glu Thr Ala Glu Ala Ile Arg Leu Ala
385                 390                 395                 400
Thr Ile Gln Gly Tyr Ala Thr Ile Leu Ser His Arg Ser Gly Glu Thr
                405                 410                 415
Glu Asp Thr Thr Ile Ala Asp Leu Ala Val Ala Phe Asn Thr Gly Gln
            420                 425                 430
Ile Lys Thr Gly Ser Leu Ser Arg Ser Glu Arg Ile Ala Lys Tyr Asn
        435                 440                 445
Arg Leu Met Ala Ile Glu Glu Glu Met Gly Pro Glu Ala Leu Phe Gln
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Asp Ser Asn Pro Phe Ser Lys Ala
465                 470
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Ala Ile Arg Arg Leu Ser Gln Gly Ile Thr Asp Gly Val Pro Ala Gln
        35                  40                  45
Val Leu Leu Gly Thr Thr Gly Ser Gly Lys Thr Phe Thr Met Ala Asn
    50                  55                  60
Val Ile Ala Asn Val Asn Val Pro Thr Leu Val Leu Ala His Asn Lys
65                  70                  75                  80
Thr Leu Ala Ala Gln Leu Tyr Gln Glu Phe Lys Ala Phe Phe Pro Glu
                85                  90                  95
Asn Ala Val Glu Tyr Phe Ile Ser Tyr Tyr Asp Tyr Tyr Gln Pro Glu
            100                 105                 110
Ala Tyr Ile Ala Arg Ser Asp Thr Tyr Ile Glu Lys Ser Leu Leu Ile
        115                 120                 125
Asn Asp Glu Ile Asp Lys Leu Arg Leu Ser Ala Thr Arg Ser Ile Leu
    130                 135                 140
Glu Arg Arg Asp Thr Leu Ile Val Ser Ser Ile Ser Cys Ile Tyr Gly
145                 150                 155                 160
Ile Gly Ser Pro Asp Asn Tyr Ser Ser Met Ala Leu Thr Leu Glu Val
                165                 170                 175
Gly Lys Glu Tyr Pro Arg Ser Gln Leu Ser Ser Gln Leu Val Arg Met
            180                 185                 190
His Tyr Gln Ala Ser Ser Thr Pro Gln Arg Ser Ala Phe Arg Glu Arg
        195                 200                 205
Gly Ser Val Ile Asp Ile Phe Leu Ala Tyr Glu Ser Asp Leu Ala Val
    210                 215                 220
Arg Leu Glu Phe Met Asn Asp Thr Leu Ile Ser Ile Glu Tyr Val Asp
225                 230                 235                 240
Pro Leu Thr Met Ile Pro Ser His Thr Thr Ser Ser Ile Thr Leu Tyr
                245                 250                 255
Pro Gly Ser His Tyr Val Thr Pro Glu Ala Val Arg Glu Gln Ala Ile
            260                 265                 270
Arg Thr Ile Arg Glu Glu Leu Glu Gln Arg Met Leu Phe Phe Glu Gly
        275                 280                 285
Arg Pro Val Glu Gln Glu Arg Leu Phe Gln Arg Thr Thr His Asp Ile
    290                 295                 300
Glu Met Ile Lys Glu Ile Gly Phe Cys Lys Gly Ile Glu Asn Tyr Ser
305                 310                 315                 320
Arg His Phe Thr Gly Ala Ala Pro Gly Glu Pro Pro Thr Cys Leu Leu
                325                 330                 335
Asp Tyr Phe Pro Asp Asp Phe Leu Leu Ile Ile Asp Glu Ser His Gln
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            340                 345                 350
Thr Leu Pro Gln Leu Arg Ala Met Tyr Arg Gly Asp Gln Ser Arg Lys
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Gln Ser Leu Val Glu Tyr Gly Phe Arg Leu Pro Ser Ala Phe Asp Asn
    370                 375                 380
Arg Pro Leu Thr Tyr Glu Glu Ala Arg Arg Tyr Phe His Arg Val Ile
385                 390                 395                 400
Tyr Val Ser Ala Thr Pro Gly Asp Leu Glu Ile Gln Glu Ser Arg Gly
                405                 410                 415
His Ile Ile Glu Gln Ile Ile Arg Pro Thr Gly Ile Pro Asp Leu Leu
            420                 425                 430
Pro Glu Ile Arg Pro Ala Lys Gly Gln Ile Asp Asp Leu Leu Glu Glu
        435                 440                 445
Ile Arg Gln Arg Leu Arg Lys Asp Gln Glu Lys Ile Leu Val Ile Ser
    450                 455                 460
Val Thr Lys Lys Leu Ala Glu Asp Ile Ala Ala Phe Leu Ala Glu Leu
465                 470                 475                 480
Gly Ile Ala Ala Ala Tyr Leu His Ser Gly Ile Glu Thr Ala Glu Arg
                485                 490                 495
Thr Gln Ile Leu Thr Asp Leu Arg Leu Gly Asn Ile Asp Val Leu Ile
            500                 505                 510
Gly Val Asn Leu Leu Arg Glu Gly Ile Asp Leu Pro Glu Val Ser Leu
        515                 520                 525
Val Ala Ile Leu Asp Ala Asp Lys Glu Gly Phe Leu Arg Ser Ser Ala
    530                 535                 540
Ser Leu Ile Gln Phe Cys Gly Arg Ala Ala Arg Asn Ile His Gly Lys
545                 550                 555                 560
Val Ile Cys Tyr Ala Asp Arg Ile Thr Pro Ser Met Asp His Met Leu
                565                 570                 575
Lys Glu Thr Glu Arg Arg Arg Lys Ile Gln Leu Asp Tyr Asn Gln Gln
            580                 585                 590
His Lys Ile Thr Pro Gln Pro Ile Ile Lys Pro Phe Leu Ala Asn Pro
        595                 600                 605
Ile Thr Lys Glu Ala Gly Gln Glu Glu Thr Arg Leu Lys Met Gln Ser
    610                 615                 620
Ser Lys Glu Leu Glu Ala Ser Ile Lys Thr Tyr Glu Glu Ala Met Tyr
625                 630                 635                 640
Gln Ala Ala Gln Glu Phe Gln Phe Asp Glu Ala Ala Lys Tyr Arg Asp
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Leu Met Asn Ala Ala Lys Lys Gln Leu Leu Phe Gln Lys Gly Glu Glu
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Glu Asn Gly Asp
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            20                  25                  30
Thr Met Lys Lys Lys Arg Val Leu Thr Gly Asp Arg Pro Thr Gly Lys
        35                  40                  45
Leu His Leu Gly His Trp Ile Gly Ser Ile Met Asn Arg Leu Gln Leu
    50                  55                  60
Gln Asn Asp Ser Arg Tyr Asp Cys Phe Phe Ile Ile Ala Asp Leu His
65                  70                  75                  80
Thr Leu Thr Thr Lys Thr Arg Lys Glu Glu Val Leu Gln Ile Asp Asn
                85                  90                  95
His Ile Tyr Asp Val Leu Ala Asp Trp Leu Ser Val Gly Ile Asn Pro
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            100                 105                 110
Glu Lys Ser Ala Ile Tyr Leu Gln Ser Ala Ile Pro Glu Ile Tyr Glu
        115                 120                 125
Leu Asn Leu Ile Phe Ser Met Leu Thr Pro Leu Asn His Ile Met Gly
    130                 135                 140
Ile Pro Ser Ile Lys Glu Met Ala Ser Asn Ala Ser Leu Asn Glu Glu
145                 150                 155                 160
Ser Leu Ser His Gly Leu Ile Gly Tyr Pro Val Leu Gln Ser Ala Asp
                165                 170                 175
Ile Leu Leu Ala Lys Ala His Leu Val Pro Val Gly Lys Asp Asn Glu
            180                 185                 190
Ala His Val Glu Leu Thr Arg Asp Ile Ala Lys Thr Phe Asn Arg Leu
        195                 200                 205
Tyr Gly Glu Val Phe Pro Glu Pro Asp Ile Leu Gln Gly Glu Leu Thr
    210                 215                 220
Ala Leu Val Gly Thr Asn Gly Gln Gly Lys Met Ser Lys Ser Ala Asn
225                 230                 235                 240
Asn Ala Ile Tyr Leu Ser Asp Asp Ala Lys Thr Val Gln Glu Lys Ile
                245                 250                 255
Arg Lys Leu Tyr Thr Asp Pro Asn Arg Ile His Ala Thr Thr Pro Gly
            260                 265                 270
Arg Val Glu Gly Asn Pro Leu Phe Ile Tyr His Asp Leu Phe Asn Pro
        275                 280                 285
His Lys Glu Glu Val Glu Glu Phe Lys Thr Arg Tyr Arg Gln Gly Cys
    290                 295                 300
Ile Lys Asp Val Glu Val Lys Ala Arg Leu Ala Glu Glu Ile Asn Leu
305                 310                 315                 320
Phe Leu Asn Pro Phe Arg Glu Lys Arg Ser Glu Leu Val Ala Gln Pro
                325                 330                 335
Lys Phe Leu Glu Glu Ala Leu Gln Gln Gly Thr Glu Lys Met Arg Thr
            340                 345                 350
Val Ala Arg Glu Thr Met Glu Glu Val His Asp His Leu Gly Leu Ser
        355                 360                 365
Arg Lys Trp Arg Thr Ile Leu Ala Ser Ser Lys
    370                 375
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<400>872
Leu Lys Ser Tyr Lys Lys Leu Gln Leu Thr Phe Phe Leu Thr Leu Arg
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Tyr Pro Val Met Thr Thr Lys Pro Lys Thr Leu Glu Ile Asp Asn Asn
             20                  25                  30
Thr Phe Leu Leu Leu Glu Gly Asn Leu Lys Arg Ile Phe Ala Thr Pro
         35                  40                  45
Ile Gly Tyr Thr Thr Phe Arg Glu Phe Gln Asn Val Val Phe Asn Cys
     50                  55                  60
Ala Gln Gly Gln Gln Glu Leu Ala Asn Phe Leu Phe Glu Met Leu Ile
 65                  70                  75                  80
Asn Gly Lys Leu Leu Gln Glu Leu Pro Ala Gly Gln Lys Gln Ser Ala
                 85                  90                  95
Gln Ser Leu Ile Val Gln Phe Met Met Pro Ile Arg Val Ala Lys Asp
            100                 105                 110
Ile His Glu Arg Gly Glu Phe Ile Asn Phe Ile Thr Ser Asp Met Leu
        115                 120                 125
Ala Gln Gln Glu Arg Cys Val Phe Leu Asn Arg Leu Ser Arg Val Asp
    130                 135                 140
Gly Gln Glu Phe Leu Leu Met Thr Asp Val Gln Asn Thr Cys His Leu
145                 150                 155                 160
Ile Arg His Leu Leu Ser Arg Leu Leu Glu Ala Gln Lys Asn Pro Ile
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                165                 170                 175
Gly Glu Lys Asn Leu Gln Glu Ile Gln Glu Asp Leu Asp Ser Leu Arg
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Ala His Phe Glu Glu Leu Thr Lys Ser Val
        195                 200
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Phe Lys Lys Pro Thr Pro Xaa Lys Met Glu Ser Leu Xaa Lys Lys Arg
            20                  25                  30
Leu Glu Gly Glu Leu Ser Pro Xaa Xaa Asn Gly Phe Thr Thr Pro Lys
        35                  40                  45
Leu Cys Ser Gln Glu Glu Ala Arg Phe Arg Gln Leu Leu Glu Glu Tyr
    50                  55                  60
Ser Phe Ser Lys Glu Ile Ser His Asn Asp Leu Gln Gln Leu Cys His
65                  70                  75                  80
Leu Ser Ala Gln Val Lys Gln Ile His His Gln Ala Val Leu Leu His
                85                  90                  95
Gly Glu Arg Ile Lys Lys Val Arg Glu Leu Leu Lys Thr Tyr Arg Glu
            100                 105                 110
Gly Ala Phe Ser Ala Trp Leu Leu Leu Thr Tyr Gly Asn Arg Gln Thr
        115                 120                 125
Pro Tyr Asn Phe Leu Val Tyr Tyr Glu Leu Phe Ser Ala Leu Pro Asp
    130                 135                 140
Thr Leu Lys Leu Glu Leu Glu Arg Leu Pro Arg Gln Ala Val Tyr Thr
145                 150                 155                 160
Leu Ala Ser Arg Glu Gly Ser Gln Glu Lys Lys Glu Glu Ile Ile Arg
                165                 170                 175
Asn Tyr Gln Gly Glu Thr Arg Gly Glu Leu Leu Glu Ile Ile Arg Arg
            180                 185                 190
Glu Phe Pro Leu Leu Pro Thr Asp Arg Arg Gln Ser Ser Leu Ala Gln
        195                 200                 205
Gln Ala Phe Ser Phe Phe Ala Lys Gly Thr Lys Leu Leu Gln Arg Cys
    210                 215                 220
Thr Asp Ile Ser Gln Glu Glu Leu Leu Ser Leu Glu Lys Leu Ile Lys
225                 230                 235                 240
Lys Leu Gln Lys Val Thr Thr Asn Leu Leu Ser Asn Thr Lys Val Ser
                245                 250                 255
Arg Asn Asp Asp Glu Thr Gln Asn Ser Arg Asn Arg
            260                 265
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Leu Glu Ser Phe Leu Thr Leu Phe Ile Ser Phe Asn Leu Ile Arg Pro
            20                  25                  30
Cys Leu Trp Thr Asn Gln Tyr Lys Gly Ile Lys Ala Thr Lys Lys Glu
        35                  40                  45
Arg Gly Phe Leu Pro Leu Gln Gly Leu His Leu Val Ile Asn Met Lys
    50                  55                  60
Thr Ile Ala Val Asn Ser Phe Lys Gly Gly Thr Ala Lys Thr Ser Thr
65                  70                  75                  80
Thr Leu His Leu Gly Ala Ala Leu Ala Gln Tyr His Lys Ala Arg Val
                85                  90                  95
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Leu Leu Ile Asp Phe Asp Ala Gln Ala Asn Leu Thr Ala Gly Leu Gly
            100                 105                 110
Leu Asp Pro Asp Cys Tyr Asp Ser Leu Ala Val Val Leu Gln Gly Glu
        115                 120                 125
Lys Asn Ile Glu Glu Val Ile Arg Pro Ile Asp Ser Ser Gly Leu Asp
    130                 135                 140
Leu Ile Pro Ala Asp Thr Trp Leu Glu Arg Val Glu Val Ser Gly Ser
145                 150                 155                 160
Leu Ala Ala Asp Arg Tyr Ser His Glu Arg Leu Lys Ile Ile Leu Ser
                165                 170                 175
Lys Ile Glu His Arg Tyr Asp Tyr Val Ile Ile Asp Thr Pro Pro Ser
            180                 185                 190
Leu Cys Trp Leu Thr Glu Ser Ala Leu Ile Ala Ala Gln His Ala Leu
        195                 200                 205
Ile Cys Ala Thr Pro Glu Phe Tyr Ser Val Lys Gly Leu Glu Arg Leu
    210                 215                 220
Ala Thr Phe Ile Gln Gly Ile Ser Ser Arg His Pro Leu Asn Ile Leu
225                 230                 235                 240
Gly Val Thr Leu Ser Phe Trp Asn Tyr Arg Gly Lys Asn Asn Ala Ala
                245                 250                 255
Phe Thr Glu Leu Ile Gln Lys Thr Phe Pro Gly Lys Leu Leu Asn Thr
            260                 265                 270
Arg Ile Arg Arg Asp Ile Thr Ile Ser Glu Ala Ala Ile His Gly Lys
        275                 280                 285
Pro Val Phe Ser Thr Ala Pro Ser Ala Arg Ala Ser Glu Asp Tyr Leu
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Lys Leu Thr Glu Glu Leu Leu Phe Leu Leu Ser Asp Met
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             20                  25                  30
Thr Cys Asn Gln Glu Ala Phe Glu Leu Pro Glu Gly Ala Ser Ala Met
         35                  40                  45
Asp Leu Ala Asn Lys Met Lys Gln Ser His Cys Phe Val Gly Ala Leu
     50                  55                  60
Ile Asn Asp Gln Glu Lys Asp Leu Ser Thr Thr Leu Gln Asp Gly Asp
 65                  70                  75                  80
Thr Val Leu Phe Leu Thr Trp Asp Asp Pro Lys Gly Arg Glu Ile Phe
                 85                  90                  95
Leu His Thr Ser Ala His Ile Leu Ala Gln Ala Val Leu Arg Leu Trp
            100                 105                 110
Pro Ser Ala Gln Pro Thr Ile Gly Pro Val Ile Asp Gln Gly Phe Tyr
        115                 120                 125
Tyr Asp Phe Ala Asn Leu Ser Ile Ser Glu Glu Asp Phe Pro Ala Ile
    130                 135                 140
Glu Ala Met Ala Lys Thr Ile Ala Glu Glu Lys Phe Pro Ile Ser Arg
145                 150                 155                 160
Gln Val Phe Pro Asp Lys Glu Ala Ala Leu Ala Tyr Phe Ser Gln Asn
                165                 170                 175
Pro Phe Lys Ala Glu Leu Ile Ala Glu Leu Pro Glu Glu Val Glu Ile
            180                 185                 190
Ser Ala Tyr Thr Gln Gly Glu Phe Leu Asp Leu Cys Arg Gly Pro His
        195                 200                 205
Leu Pro Ser Thr Ala Pro Val Lys Ala Phe Lys Leu Leu Arg Thr Ser
    210                 215                 220
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Ser Ala Tyr Trp Lys Gly Asp Pro Ser Arg Glu Ser Leu Ile Arg Ile
225                 230                 235                 240
Tyr Gly Val Ser Phe Pro Thr Thr Lys Glu Leu Lys Glu His Leu His
                245                 250                 255
Gln Leu Glu Glu Ala Lys Lys Arg Asp His Arg Val Leu Gly Thr Lys
            260                 265                 270
Leu Asp Leu Phe Ser Gln Gln Thr Cys Ser Ala Gly Met Pro Phe Phe
        275                 280                 285
His Pro Arg Gly Met Val Val Trp Asn Ala Leu Val Asp Tyr Trp Lys
    290                 295                 300
Arg Leu His Gln Arg Ala Gly Tyr Gln Gln Ile Gln Thr Pro Gln Leu
305                 310                 315                 320
Met Asn Arg Glu Leu Trp Glu Ile Ser Gly His Trp Glu Asn Tyr Lys
                325                 330                 335
Glu Asn Met Tyr Thr Leu Thr Val Asp Glu Glu Asp Tyr Ala Ile Lys
            340                 345                 350
Pro Met Asn Cys Pro Gly Cys Met Leu Tyr Tyr Lys Thr Gln Leu His
        355                 360                 365
Ser Tyr Arg Glu Phe Pro Leu Arg Ile Ala Glu Ile Gly His Val His
    370                 375                 380
Arg His Glu Leu Ser Gly Ala Leu Ser Gly Leu Met Arg Val Arg Thr
385                 390                 395                 400
Phe His Gln Asp Asp Ala His Val Phe Leu Thr Pro Glu Gln Val Glu
                405                 410                 415
Glu Glu Thr Leu Asn Ile Leu Asn Leu Val Ser Glu Leu Tyr Gly Thr
            420                 425                 430
Phe Gly Leu Glu Tyr His Leu Glu Leu Ser Thr Arg Pro Glu Gln Gly
        435                 440                 445
Thr Ile Gly Ser Asp Asp Leu Trp Glu Leu Ala Thr Glu Ala Leu Lys
    450                 455                 460
Arg Ala Leu Val Lys Ser Gln Lys Pro Phe Ile Ile Ser Pro Gly Glu
465                 470                 475                 480
Gly Ala Phe Tyr Gly Pro Lys Ile Asp Ile His Val Lys Asp Ala Ile
                485                 490                 495
Asn Arg Thr Trp Gln Cys Gly Thr Ile Gln Leu Asp Met Phe Leu Pro
            500                 505                 510
Glu Arg Phe Asp Leu Lys Tyr Thr Asn Ala Gln Gly Glu Lys Ser Thr
        515                 520                 525
Pro Ile Met Leu His Arg Ala Leu Phe Gly Ser Ile Glu Arg Phe Leu
    530                 535                 540
Gly Ile Leu Ile Glu His Phe Lys Gly Arg Phe Pro Leu Trp Leu Ser
545                 550                 555                 560
Pro Glu His Val Arg Ile Ile Thr Val Ala Asp Arg His Glu Ala Arg
                565                 570                 575
Ala Gln Glu Leu Ala Lys His Phe Ser Gln Met Gly Ile Ile Val Ser
            580                 585                 590
Val Asp Ser Ser Asn Glu Ser Val Ser Lys Lys Ile Arg Asn Ala Gln
        595                 600                 605
Asn Met Gln Val Asn Tyr Met Ile Thr Ile Gly Asp Lys Glu Leu Glu
    610                 615                 620
Thr His Leu Leu Ala Val Arg Thr Arg Asp Asn Arg Val Leu Asn Asp
625                 630                 635                 640
Ile Ala Val Glu Gln Phe Ser His Val Ile Leu Glu Glu Leu Arg Ser
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Leu Ser Leu Thr Pro Ser Leu
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            20                  25                  30
Pro Ala Asn Thr Ile Arg Leu Pro Val Thr Asn Lys Gly Ala Ala Ala
        35                  40                  45
Ser Ile Ala Asp Leu Leu Lys Ala Asn Glu Glu Asp Gln Met Lys Ala
    50                  55                  60
Phe Arg Lys Ile Lys Lys Ile Ala Met Ser Gln Gln Gly Leu Asn Thr
65                  70                  75                  80
Gln Val Arg Arg Val Gln Ala Asn Asn Asn Ala Leu Thr Ala Thr Met
                85                  90                  95
Asn Arg Val Ala Arg Ile Tyr Asp Pro Phe Tyr Arg Thr Thr Lys Leu
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Val Ala Ser Cys Ala Leu Lys Lys
        115                 120
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Phe Leu Ile Phe Leu Asn Ala Phe Ile Trp Ser Ser Ser Phe Ala Leu
        35                  40                  45
Ser Lys Ser Ala Met Glu Ala Ala Ala Pro Leu Phe Val Thr Gly Ser
    50                  55                  60
Arg Met Val Leu Ala Gly Val Val Leu Phe Gly Leu Leu Leu Cys Lys
65                  70                  75                  80
Arg Glu Ser Leu Arg Leu Pro Arg Pro Ala Ile Met Pro Ile Val Leu
                85                  90                  95
Leu Ser Val Ile Gly Phe Tyr Leu Thr Asn Val Leu Glu Phe Ile Gly
            100                 105                 110
Leu Gln Arg Leu Ser Ser Ser Thr Ala Cys Phe Ile Tyr Gly Phe Ser
        115                 120                 125
Pro Phe Thr Ala Ala Phe Cys Ser Tyr Val Gln Leu Arg Glu Val Val
    130                 135                 140
Thr Trp Lys Lys Leu Gly Gly Leu Ser Leu Gly Leu Val Ser Tyr Leu
145                 150                 155                 160
Val Tyr Leu Leu Phe Gly Gly Ser Glu Asp Val Ala Glu Trp Gly Trp
                165                 170                 175
Gln Leu Gly Leu Pro Glu Leu Leu Leu Ile Ala Ala Thr Cys Leu Ser
            180                 185                 190
Ser Tyr Gly Trp Thr Leu Leu Arg Lys Leu Gly Arg Arg Cys Glu Ser
        195                 200                 205
Leu Ser Met Thr Ala Ile Asn Ala Tyr Ala Met Val Ile Ala Gly Val
    210                 215                 220
Leu Ser Leu Ile His Ser Ala Val Thr Glu Val Trp Asn Pro Val Pro
225                 230                 235                 240
Val Glu Asn Pro Leu Leu Phe Leu Gln Ala Ile Gly Ala Leu Val Ile
                245                 250                 255
Phe Ser Asn Leu Ile Cys Tyr Asn Leu Phe Ala Lys Leu Leu Arg Ser
            260                 265                 270
Phe Ser Ser Thr Phe Leu Ser Phe Cys Asn Leu Val Met Pro Leu Phe
        275                 280                 285
Ala Ser Phe Phe Gly Trp Leu Leu Leu Gly Glu Ser Phe Pro Pro Gly
    290                 295                 300
Leu Leu Phe Ala Val Gly Phe Met Val Leu Gly Cys Arg Leu Ile Tyr
305                 310                 315                 320
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His Glu Glu Phe Arg Gln Gly Tyr Val Leu Thr Ser Glu
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            20                  25                  30
Asn Ala Ile Arg Thr Gln Ala Gly His Gln Ala Lys Ala Thr Glu Leu
        35                  40                  45
Gln Ala Gln Gln Ser Leu Ile Ser Gly Ile Thr Asn Ile Val Gly Phe
    50                  55                  60
Ala Val Ser Val Gly Gly Gly Ile Leu Ser Ala Ser Lys Ser Leu Gly
65                  70                  75                  80
Gly Leu Lys Ser Ala Ala Phe Thr Asn Glu Thr Ala Ser Ala Ala Thr
                85                  90                  95
Ser Ala Thr Ser Ser Leu Ala Lys Thr Ala Thr Ser Ala Leu Asp Asp
            100                 105                 110
Val Ala Gly Thr Ala Thr Ala Val Gly Ala Lys Ala Thr Ser Gly Ala
        115                 120                 125
Ala Ser Ala Ala Ser Ser Ala Ala Thr Lys Leu Thr Gln Asn Met Ala
    130                 135                 140
Glu Ser Ala Ser Lys Thr Leu Ser Gln Thr Ala Ser Lys Ser Ala Gly
145                 150                 155                 160
Gly Leu Phe Gly Gln Ala Leu Asn Thr Pro Ser Trp Ser Glu Lys Val
                165                 170                 175
Ser Arg Gly Met Asn Val Val Lys Thr Gln Gly Thr Arg Ala Thr Lys
            180                 185                 190
Phe Ala Gly Arg Ala Leu Ser Ser Ala Met Asn Ile Ser Gln Met Val
        195                 200                 205
His Gly Leu Thr Ala Gly Ile Asp Gly Ile Val Gly Gly Val Ile Gly
    210                 215                 220
Ala Gln Val Ala Gln Glu Gln Arg Met Ala Gly Met Ala Glu Ala Arg
225                 230                 235                 240
Ala Glu Glu Leu Lys Ser Leu Asn Ser Val Gln Ala Gln Tyr Ala Ser
                245                 250                 255
Gln Ala Gln Gln Leu Gln Glu Gln Ser Gln Gln Ser Phe Asn Ser Ala
            260                 265                 270
Leu Gln Thr Leu Gln Ser Ile Ser Asp Ser Ala Leu Gln Thr Thr Ala
        275                 280                 285
Ser Met Phe Asn
    290
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Asp Pro Ser Leu Leu Ala Gln Leu Thr Gln Asn Ala Asn Ser Ala Ser
            20                  25                  30
Ala Ala Ser Thr Gly Lys Asn Gly Gln Val Ala Gly Ala Lys Gln Glu
        35                  40                  45
Asn Val Asp Ala Ser Phe Glu Asp Leu Leu Gln Asp Ala Gln Gly Thr
    50                  55                  60
Gly Gly Ser Lys Lys Ala Thr Ala Asn Gln Thr Ser Lys Ser Arg Lys
65                  70                  75                  80
Ser Glu Lys Ala Gln Ala Ser Ser Gly Thr Ser Thr Thr Thr Ser Val
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                85                  90                  95
Ala Gln Ala Ser Gln Thr Ala Thr Ala Gln Ala Val His Gly Ala Arg
            100                 105                 110
Asp Ser Gly Phe Asn Ser Asp Gly Ser Ala Thr Leu Pro Ser Pro Thr
        115                 120                 125
Gly Thr Glu Val Asn Gly Val Val Leu Arg Lys Gly Met Gly Thr Leu
    130                 135                 140
Ala Leu Met Gly Leu Ile Met Thr Tyr Ser Arg Ser Lys Cys
145                 150                 155
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Arg Gly Tyr Met Ser Leu Ser Ser Ser Ser Ser Ser Asp Ser Ser Asn
  1               5                  10                  15
Leu Lys Asn Val Leu Ser Gln Val Ile Ala Ser Thr Pro Gln Gly Val
            20                  25                  30
Pro Asn Ala Asp Lys Leu Thr Asp Asn Gln Val Lys Gln Val Gln Gln
        35                  40                  45
Thr Arg Gln Asn Arg Asp Asp Leu Ser Met Glu Ser Asp Val Ala Val
    50                  55                  60
Ala Gly Thr Ala Gly Lys Asp Arg Ala Ala Ser Ala Ser Gln Ile Glu
65                  70                  75                  80
Gly Gln Glu Leu Ile Glu Gln Gln Gly Leu Ala Ala Gly Lys Glu Thr
                85                  90                  95
Ala Ser Ala Asp Ala Thr Ser Leu Thr Gln Ser Ala Ser Lys Gly Ala
            100                 105                 110
Ser Ser Gln Gln Cys Ile Glu Asp Thr Ser Lys Ser Leu Glu Leu Ser
        115                 120                 125
Ser Leu Ser Ser Leu Ser Ser Val Asp Ala Thr His Leu Gln Glu Ile
    130                 135                 140
Gln Ser Ile Val Ser Ser Ala Met Gly Ala Thr Asn Glu Leu Ser Leu
145                 150                 155                 160
Thr Asn Leu Glu Thr Pro Gly Leu Pro Lys Pro Ser Thr Thr Pro Arg
                165                 170                 175
Gln Glu Val Met Glu Ile Ser Leu Ala Leu Ala Lys Ala Ile Thr Ala
            180                 185                 190
Leu Gly Glu Ser Thr Gln Ala Ala Leu Glu Asn Phe Gln Ser Thr Gln
        195                 200                 205
Ser Gln Ser Ala Asn Met Asn Lys Met Ser Leu Glu Ser Gln Gly Leu
    210                 215                 220
Lys Ile Asp Lys Glu Arg Glu Glu Phe Lys Lys Met Gln Glu Ile Gln
225                 230                 235                 240
Gln Lys Ser Gly Thr Asn Ser Thr Met Asp Thr Val Asn Lys Val Met
                245                 250                 255
Ile Gly Val Thr Val Ala Ile Thr Val Ile Ser Val Val Ser Ala Leu
            260                 265                 270
Phe Thr Cys Gly Leu Gly Leu Ile Gly Thr Ala Ala Ala Gly Ala Thr
        275                 280                 285
Ala Ala Thr Ala Gly Ala Thr Ala Ala Ala Thr Thr Ala Thr Ser Val
    290                 295                 300
Thr Thr Thr Val Ala Thr Gln Val Thr Met Gln Ala Val Val Gln Val
305                 310                 315                 320
Val Lys Gln Ala Ile Ile Gln Ala Val Lys Arg Ala Ile Val Gln Ala
                325                 330                 335
Ile Lys Gln Gly Ile Lys Gln Gly Ile Lys Gln Ala Ile Lys Gln Ala
            340                 345                 350
Val Lys Ala Ser Val Lys Thr Leu Ala Lys Asn Val Gly Lys Ile Phe
        355                 360                 365
Ser Ala Gly Lys Asn Ala Val Ser Lys Ser Phe Pro Lys Leu Ser Lys
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    370                 375                 380
Val Ile Asn Thr Leu Gly Ser Lys Trp Val Thr Leu Gly Val Gly Ala
385                 390                 395                 400
Leu Thr Ala Val Pro Gln Leu Val Ser Gly Ile Thr Ser Leu Gln Leu
                405                 410                 415
Ser Asp Met Gln Lys Glu Leu Ala Gln Ile Gln Lys Glu Val Gly Ala
            420                 425                 430
Leu Thr Ala Gln Ser Glu Met Met Lys Ala Phe Thr Leu Phe Trp Gln
        435                 440                 445
Gln Ala Ser Lys Ile Ala Ala Lys Gln Thr Glu Ser Pro Ser Glu Thr
    450                 455                 460
Gln Gln Gln Ala Ala Lys Thr Gly Ala Gln Ile Ala Lys Xaa Cys Pro
465                 470                 475                 480
Gln
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<210>881
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<212>PRT
<213>Chlamydia trachomatis

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Pro Lys Val Xaa Pro Ala Tyr Val Ser Lys Lys Glu Ser Pro Ala Leu
            20                  25                  30
Gln Glu Leu Gln Asn Ala Met Ile Ser Phe Ser Gln Asp Leu Pro Leu
        35                  40                  45
Ala Gln Met Phe Ser Glu Ile Gln Asp Glu Lys Gln Leu Ala Lys Met
    50                  55                  60
Met Ala Ala Leu Ser Gly Met Leu Asp Ser Leu Pro Val Glu Thr Leu
65                  70                  75                  80
Thr Lys Gly Val Phe Asp Asn Pro Lys Glu Glu Ala Gln Leu Ser Gln
                85                  90                  95
Glu Ile Ser Ser Ile Phe Leu Gly Leu Lys His Leu Thr Glu Thr Val
            100                 105                 110
Asn Lys His Ile Ala Asp Glu Lys
        115                 120
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<210>882
<211>234
<212>PRT
<213>Chlamydia trachomatis

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Asn Leu Ile Leu Leu Val Val Ile Cys Tyr Phe Ile Phe Leu Gly Ile
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Ile Ala Met Ser Thr Pro Ser Ser Asn Asn Ser Lys Lys Pro Ser Ala
            20                  25                  30
Ser Phe Asn Lys Lys Ser Arg Ser Arg Leu Ala Glu Ile Ala Ala Gln
        35                  40                  45
Lys Lys Ala Lys Ala Glu Asp Leu Glu Gln Lys Tyr Pro Val Pro Thr
    50                  55                  60
Glu Glu Glu Thr Lys Gln Val Leu Met Asp Ile Leu Gln Gly Leu Ser
65                  70                  75                  80
Asn Gly Leu Thr Leu Gln Gln Ile Leu Gly Leu Ser Asp Val Leu Leu
                85                  90                  95
Glu Glu Ile Tyr Thr Val Ala Tyr Thr Phe Tyr Ser Gln Gly Lys Tyr
            100                 105                 110
Arg Glu Ala Ile Gly Leu Phe Gln Ile Leu Thr Ala Ser Lys Pro Gln
        115                 120                 125
Cys Tyr Lys Tyr Ile Leu Gly Leu Ser Ser Cys Tyr His Gln Leu Lys
    130                 135                 140
Met Tyr Asp Glu Ala Ala Phe Gly Phe Phe Leu Ala Phe Asp Ala Gln
145                 150                 155                 160
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Pro Glu Asn Pro Ile Pro Pro Tyr Tyr Ile Ala Asp Ser Leu Met Lys
                165                 170                 175
Leu Asn Gln Pro Glu Glu Ser Gln Asp Phe Leu Asp Ile Thr Ile Asp
            180                 185                 190
Met Cys Lys Asn Lys Pro Glu Tyr Lys Val Leu Lys Asp Arg Cys Ser
        195                 200                 205
Ile Met Lys Gln Ser Leu Asp Ala Val Leu Lys Lys Glu Lys Ser Ala
    210                 215                 220
Lys Gly Ser Glu Thr Gln Ala Ser Val Ser
225                 230
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<211>442
<212>PRT
<213>Chlamydia trachomatis
<400>883
Val Ser Leu Ser Pro Ser Arg Ile Arg Leu Leu Asp Ser Val Thr Val
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Asn Gln Ile Ser Ala Gly Glu Val Ile Glu Asn Ala Ala Ser Val Val
             20                  25                  30
Lys Glu Leu Ile Glu Asn Ser Leu Asp Ala Gly Ala Asp Glu Ile His
         35                  40                  45
Ile Glu Thr Leu Gly Gly Gly Arg Gly Gln Ile Val Val Arg Asp Asn
     50                  55                  60
Gly Val Gly Met Asp Pro Glu Glu Val Pro Val Ala Leu Gln Arg His
 65                  70                  75                  80
Ala Thr Ser Lys Ile Ala His Phe Ala Asp Ile Phe Ser Leu Ala Ser
                85                  90                  95
Tyr Gly Phe Arg Gly Glu Ala Leu Pro Ser Ile Ala Ser Ile Ser Lys
            100                 105                 110
Met Glu Ile His Thr Ala Arg Ala Gly Gly Leu Gly Ser Lys Thr Leu
        115                 120                 125
Ile Glu Lys Gly Glu Pro Val Cys Cys Glu Pro Ala Pro Arg Gln Gln
    130                 135                 140
Gly Thr Thr Ile Ala Val His Ser Leu Phe Tyr Asn Val Pro Met Arg
145                 150                 155                 160
Gln Ser Phe Gln Lys Ser Pro Gln Met Asp Arg Leu Ala Ile Arg Arg
                165                 170                 175
Leu Leu Glu Asn Ser Val Leu Ser Ser Glu Gly Ile Gly Trp Thr Trp
            180                 185                 190
Ile Ser Glu Arg Arg Gln Glu Leu His Val Ala Lys Lys Gln Gly Phe
        195                 200                 205
Ile Glu Arg Val Ala Leu Val Leu Gly Glu Ser Phe Val Gln Glu Ala
    210                 215                 220
Phe Phe Ile Asp Lys Gln Gln Gly Asp Leu Arg Val Leu Gly Phe Leu
225                 230                 235                 240
Gly Ser Pro Asn Gln His Arg Ser Thr Arg Gln Gly Gln Arg Leu Phe
                245                 250                 255
Ile Asn Asn Arg Ala Val Glu Ser Ser Phe Ile Ser Lys Lys Val Ala
            260                 265                 270
Glu Ala Tyr Ala Trp Met Ile Pro Ala Gln Arg Tyr Pro Ile Phe Val
        275                 280                 285
Leu Lys Leu Phe Leu Pro Pro Met Trp Cys Asp Phe Asn Val His Pro
    290                 295                 300
Gln Lys Thr Glu Val Arg Leu Leu Gln Glu Gly Gln Ile Ser Asn Leu
305                 310                 315                 320
Leu Val Glu Ala Ile Ser Glu Ala Leu Leu Arg Arg Ser Ser Ser Leu
                325                 330                 335
Glu Glu Ile Val Leu Lys Val Pro Thr Glu Lys Ile Pro Ile Glu Asn
            340                 345                 350
Glu Gly Ile Ser Val Pro Ser Ile Arg Pro Ala Ile Val Ser Ala Pro
        355                 360                 365
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Leu Ser Cys Pro Thr Phe Ser Gln Gln Pro Tyr Leu Lys Thr Glu Met
370 375 380
Ala Thr Ile Val Ser Arg Asp Ser Ala Ser Ser Ser Leu Ser Val Val
385 390 395 400
Glu Lys Val Arg Phe Leu Thr Ser Leu Gly Lys Val Leu Leu Val Glu
405 410 415
Asp Ser Glu Gly Val His Val Val Phe Val Gln Leu Arg Val Asn Ile
420 425 430
Cys Phe Met Phe Leu Tyr Tyr Pro Ser Val
435 440

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<212>PRT
<213>Chlamydia trachomatis
<400>884
Leu Ser Trp Lys Gln Thr Phe Tyr Arg Cys Gly Leu Glu Ala Leu Thr
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Ala Leu Gly Ile Glu Leu Ser Arg Ile Ser Pro Asp Ser Phe Ala Ile
20 25 30
Glu Ser Ala Pro Pro Phe Ile Gln Glu Glu Glu Leu Lys Glu Trp Ile
35 40 45
Val Ala Leu Ala Gln Glu Gly Ala Leu His Val Gly Glu Ser Phe Glu
50 55 60
Gln Leu Val Glu Asn Thr Val Gln Lys Leu Val Phe Ser Arg Asn Ala
65 70 75 80
Arg Ala Phe Asp Tyr Ala Trp Leu Asp Ile Leu Trp Lys Leu Gly Lys
85 90 95
Pro Glu Lys Ser Val
100

<210>885
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<212>PRT
<213>Chlamydia trachomatis
<400>885
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Ala Leu Asp Ala Phe Leu Ile Glu Lys Asp Glu Asp Ile Ser Tyr Phe
20 25 30
Leu Gln Asp Gln Ala Arg Ser Gly Val Leu Leu Ile Thr Arg Asp Glu
35 40 45
Ala Val Leu Phe Val Ser Pro Leu Asp Lys Asp Leu Tyr Ala Arg Ile
50 55 60
Gln Asp Val Val Leu Val Ser Tyr Ser Lys Ser Val Asp Gln Glu Leu
65 70 75 80
Gly Ser Tyr Ile Glu Asn Thr Gly Leu Lys Thr Ile Gly Phe Asp Ser
85 90 95
Glu Tyr Thr Pro Tyr Gly Ile Ala Gln Lys Arg Met Asn Ser Gly Tyr
100 105 110
Ala Phe Ser Pro Gln Ser Leu Val Ala Glu Lys Leu Arg Cys Val Lys
115 120 125
Ser Thr Glu Glu Ile Gln Lys Met Thr Arg Ala Ala Glu Ile Gly Ser
130 135 140
Ala Gly Tyr Asp Phe Val Leu Ala Ala Leu Arg Pro Gly Ile Thr Glu
145 150 155 160
Lys Glu Leu Val Arg Met Leu His Val Phe Trp Ala Asn Leu Gly Ile
165 170 175
Glu Lys Val Ser Phe Pro Pro Ile Ile Ala Phe Gly Glu Asn Ala Ala
180 185 190
Phe Pro His Ala Ile Pro Thr Asn Arg Ser Leu Lys Lys Gly Asp Val
195 200 205
Val Leu Ile Asp Ile Gly Val Cys Tyr Glu Gly Tyr Cys Ser Asp Met

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    210                 215                 220
Thr Arg Thr Val Ala Phe Gly Ala Ala Pro Glu Gln Gln Leu Leu Asp
225                 230                 235                 240
Gly Tyr Val Ala Val Ala Glu Ala Gln Arg Ala Ala Ile Glu Phe Cys
                245                 250                 255
Arg Ala Gly Val Pro Cys Arg Asp Val His Lys Glu Ala Val Arg Ile
            260                 265                 270
Leu Arg Ala His Gly Met Glu Lys Ala Phe Ile His Gly Leu Gly His
        275                 280                 285
Gly Val Gly Arg Glu Val His Glu Tyr Pro Arg Leu Ser Pro Phe Ser
    290                 295                 300
Asp Ala Thr Leu Gln Leu Asn Met Ala Val Thr Val Glu Pro Gly Val
305                 310                 315                 320
Tyr Phe Pro Gly Val Gly Gly Ile Arg Ile Glu Asp Thr Ile Val Ile
                325                 330                 335
Gly Val Asn Glu Asn Leu Asn Leu Thr Asn Arg Lys Val Ser Ser Glu
            340                 345                 350
Ile Ile Ile Ile
        355
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<213>Chlamydia trachomatis
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Val Val Met Arg Gln Leu His Phe Phe Phe Tyr Gln Trp Ile Arg Gly
             20                  25                  30
Ala Ala Leu Ile Gly Ala Ile Ala Gly Val Cys Ser Pro Leu Thr Ala
         35                  40                  45
Glu Glu Lys Gln Pro Ala Cys Ser Gly Ala Trp Ala Leu Gln Asp Phe
     50                  55                  60
Ser Ile Glu Glu Glu Leu Pro Asp Leu Arg Asn Gln Phe Val Phe Leu
 65                  70                  75                  80
Gly Cys Asn Lys Arg Pro Asp Ala Arg Ser Gly Lys Phe Phe Leu Glu
                85                  90                  95
Leu Ala Thr Thr Asn Ala Ile Gln Glu Val Ser Leu Gly Glu Lys Val
            100                 105                 110
Phe Leu Arg Gln Gly Pro Asp Glu Glu Thr Leu Val Phe Ser Ala Glu
        115                 120                 125
Pro Thr Pro Leu Trp Leu Glu Cys Arg Pro Ser Ser Asp Gly Arg Ser
    130                 135                 140
Leu Asp Val Val Val Arg Met Lys Gly Ala Leu Gly Gly Ala Val Ser
145                 150                 155                 160
Ser Pro Lys Glu Arg Ala His Phe Ser Leu Ser Met Ala Pro Arg Cys
                165                 170                 175
Ser Gln Thr Trp Glu Ile Gly Gly Met Arg Val Glu Pro Ser Ile Ala
            180                 185                 190
Val Lys Gln Arg Ile Arg Cys Val Gly Gly Asp Lys Phe Leu Leu Met
        195                 200                 205
His Gly Gly Ala Asp Tyr Val Ile Gln Ala Ala Lys Glu Arg Val Asp
    210                 215                 220
Phe Glu Ser Leu Ser Gly Glu Ala Tyr Ser Gln Tyr Leu Ala Val Gly
225                 230                 235                 240
Asp Val Leu Leu Trp Asp Gln Asp Arg Trp Val Pro Tyr Lys Thr Phe
                245                 250                 255
Gln Gly Asp Gly Thr Arg Val Pro Leu Leu Glu Val Lys Arg Leu Asp
            260                 265                 270
Asp Arg Met Met Val Ile Glu Leu Trp Ser Ile Asp Gly Leu Met Ser
        275                 280                 285
Gln Gln Ile Thr Leu Val Lys Gln Val Ser Ser Pro Ile Glu Ile Ala
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    290                 295                 300
Glu Leu Val Lys Glu Phe Ser Phe Val Gly Met Arg Thr Trp Ser Arg
305                 310                 315                 320
Pro Ile Ile Thr Ala Gly Lys Asp Arg Leu Val Leu Ser Ala Asp Asp
                325                 330                 335
Trp Val Ile His Thr Gly Glu Arg Trp Glu Arg Val Thr Ser Lys Arg
            340                 345                 350
Gln Leu Glu Asp Tyr Leu Ser Gly Lys Leu Arg Ser Pro Leu Leu Val
        355                 360                 365
Phe Glu Arg Ile Asp Lys Glu Asp Gly Glu Phe Val Phe Lys Gly His
    370                 375                 380
Val Phe Asn Thr Gln Arg Thr Val Val Glu Thr Ile Ser Leu Pro Leu
385                 390                 395                 400
Lys Gln Val Leu Glu Thr Val Ala Gln Ser His Leu Gly Gln Glu Ser
                405                 410                 415
Gly Thr Lys Asn Ser Arg Ile Gly Gly Gly Ser
            420                 425
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<400>887
Val Lys Asn Ile Leu Gly Tyr Gly Phe Leu Gly Thr Phe Cys Leu Gly
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Ser Leu Thr Val Pro Ser Phe Ser Ile Thr Ile Thr Glu Lys Leu Ala
             20                  25                  30
Ser Leu Glu Gly Lys Thr Glu Ser Leu Ala Pro Phe Ser His Ile Ser
         35                  40                  45
Ser Phe Asn Ala Glu Leu Lys Glu Ala Asn Asp Val Leu Lys Ser Leu
     50                  55                  60
Tyr Glu Glu Ala Leu Ser Leu Arg Ser Arg Gly Glu Thr Ser Gln Ala
 65                  70                  75                  80
Val Trp Asp Glu Leu Arg Thr Asp
                 85
<210>888
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<212>PRT
<213>Chlamydia trachomatis
<400>888
Cys Ser Gln Ile Phe Ile Arg Arg Ser Phe Val Ser Pro Phe Ser Arg
  1                 5                  10                  15
Arg Asp Phe Ala Gly Gly Met Gly Arg Val Ala Asn Arg Leu Ile Gly
             20                  25                  30
Ala Lys Gln Arg Ile Arg Ser Leu Glu Asp Leu Trp Ser Val Glu Val
         35                  40                  45
Ala Glu Arg Gly Gly Asp Pro Glu Asp Tyr Ala Leu Trp Asn His Pro
     50                  55                  60
Glu Thr Thr Ile Tyr Asn Leu Val Ser Asp Tyr Gly Asp Glu Gln Ser
 65                  70                  75                  80
Ile Tyr Val Ile Pro Gln Asn Val Gly Ala Met Arg Ile Thr Ala Met
                 85                  90                  95
Ser Lys Leu Val Val Pro Lys Glu Gly Phe Glu Glu Cys Leu Ser Leu
            100                 105                 110
Leu Leu Met Arg Leu Gly Ile Gly Ile Arg Gln Val Ser Pro Trp Ile
        115                 120                 125
Lys Glu Leu Tyr Leu Thr Asn Arg Glu Glu Ser Gly Val Leu Gly Ile
    130                 135                 140
Phe Gly Ser Arg Gln Glu Leu Asp Ser Leu Pro Met Thr Ala His Ile
145                 150                 155                 160
Ala Phe Val Leu Ser Ser Lys Asn Leu Asp Ala Arg Ala Asp Val Gln
                165                 170                 175
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Ala Leu Arg Lys Phe Ala Asn Ser Asp Thr Met Leu Ile Asp Phe Ile
180 185 190
Gly Gly Lys Val Trp Leu Phe Gly Ala Val Ser Glu Ile Thr Glu Leu
195 200 205
Leu Lys Ile Tyr Glu Phe Leu Gln Ser His Asn Ile Arg Glu Glu His
210 215 220
Xaa Ile Val Ser Leu Ser Lys Ile Glu Pro Ser Glu Met Leu Xaa Ile
225 230 235 240
Leu Lys Ala Ala Phe Arg Glu Asp Leu Ala Lys Glu Gly Glu Asp Ser
245 250 255
Ser Gly Val Gly Leu Lys Val Val Pro Leu Gln Asn His Gly Arg Ser
260 265 270
Leu Phe Leu Ser Gly Ala Leu Pro Ile Val Gln Lys Ala Ile Asp Leu
275 280 285
Ile Arg Glu Leu Glu Glu Gly Ile Glu Ser Pro Thr Asp Lys Thr Val
290 295 300
Phe Trp Tyr His Val Lys His Ser Asp Pro Gln Glu Leu Ala Ala Leu
305 310 315 320
Leu Ser Gln Val His Asp Ile Phe Ser Asn Gly Ala Ser Gly Ala Ser
325 330 335
Ser Ser Cys Asp Thr Gly Val Val Ser Ser Lys Ala Gly Ser Ser Ser
340 345 350
Asn Gly Leu Gly Val His Ile Asp Thr Ser Leu Arg Ser Ser Val Lys
355 360 365
Glu Gly Ser Ala Lys Tyr Gly Ser Phe Ile Ala Asp Ser Lys Thr Gly
370 375 380
Thr Leu Ile Met Val Ile Glu Lys Glu Ala Leu Pro Lys Ile Lys Met
385 390 395 400
Leu Leu Lys Lys Leu Asp Val Pro Lys Lys Met Val Arg Ile Glu Val
405 410 415
Leu Leu Phe Glu Arg Lys Leu Ser Asn Gln Arg Lys Ser Gly Leu Asn
420 425 430
Leu Leu Arg Leu Gly Glu Glu Val Cys Lys Gln Gly Thr Gln Ala Val
435 440 445
Ser Trp Ala Ser Gly Gly Ile Leu Glu Phe Leu Phe Lys Gly Gly Ala
450 455 460
Lys Gly Ile Val Pro Ser Tyr Asp Phe Ala Tyr Gln Phe Leu Met Ala
465 470 475 480
Gln Glu Asp Val Arg Ile Asn Ala Ser Pro Ser Val Val Thr Met Asn
485 490 495
Gln Thr Pro Ala Arg Ile Ala Ile Val Glu Glu Met Ser Ile Val Val
500 505 510
Ser Ser Asp Lys Asp Lys Ala Gln Tyr Asn Arg Ala Gln Tyr Gly Ile
515 520 525
Met Ile Lys Ile Leu Pro Val Ile Asn Ile Gly Glu Glu Asp Gly Lys
530 535 540
Ser Phe Ile Thr Leu Glu Thr Asp Ile Thr Phe Asp Ser Thr Gly Arg
545 550 555 560
Asn His Ala Asp Arg Pro Asp Val Thr Arg Arg Asn Ile Thr Asn Lys
565 570 575
Val Arg Ile Gln Asp Gly Glu Thr Val Ile Ile Gly Gly Leu Arg Cys
580 585 590
Asn Gln Thr Met Asp Ser Arg Asp Gly Ile Pro Phe Leu Gly Glu Leu
595 600 605
Pro Gly Ile Gly Lys Leu Phe Gly Met Asp Ser Ala Ser Asp Ser Gln
610 615 620
Thr Glu Met Phe Met Phe Ile Thr Pro Lys Ile Leu Asp Asn Pro Ser
625 630 635 640
Glu Thr Glu Glu Lys Leu Glu Cys Ala Phe Leu Ala Ala Arg Pro Gly
645 650 655
Glu Asn Asp Asp Phe Leu Arg Ala Leu Val Ala Gly Gln Gln Ala Ala

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Lys Gln Ala Ile Glu Arg Lys Glu Ser Thr Val Trp Gly Glu Glu Ser
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Ser Gly Ser Arg Gly Arg Val Glu Tyr Asp Gly Arg Glu
690 695 700

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<212>PRT
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<400>889

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20 25 30
Leu Asp Arg Leu Pro Tyr Ser Phe Leu Lys Lys Asn Tyr Leu Leu Pro
35 40 45
Val Glu Asp Leu Gly Asp Lys Ile Val Phe Ala Arg His Leu Lys Lys
50 55 60
Thr Pro Leu Glu Ala Leu Asp Glu Val Arg Leu Ile Thr Gln Lys Pro
65 70 75 80
Leu Ser Leu Val Ser Lys Glu Glu Ala Glu Ile Ile His Gly Leu Gln
85 90 95
Lys Leu Tyr Ser Asp Lys Asp Gly Lys Ala Ser Glu Met Leu Gln Ser
100 105 110
Met Gln Glu Ala Val Val Pro Glu Ser Glu Ser Asp Thr Thr Glu Leu
115 120 125
Leu Glu Asn Gln Glu Asn Ser Ala Pro Val Val Arg Leu Leu Asn Leu
130 135 140
Ile Leu Lys Glu Ala Ile Glu Glu Arg Ala Ser Asp Ile His Phe Asp
145 150 155 160
Pro Val Glu Asp Leu Leu Arg Ile Arg Tyr Arg Ile Asp Gly Val Leu
165 170 175
His Asp Arg His Ala Pro Pro Asn His Leu Arg Ala Ala Leu Ile Thr
180 185 190
Arg Ile Lys Val Leu Thr Lys Leu Asp Ile Ala Glu His Arg Leu Pro
195 200 205
Gln Asp Gly Arg Ile Lys Leu Gln Leu Gly Gly Gln Glu Ile Asp Met
210 215 220
Arg Val Ser Thr Val Pro Val Ile His Gly Glu Arg Val Val Leu Arg
225 230 235 240
Ile Leu Asp Lys Arg Asn Val Ile Leu Asp Ile Arg Gly Leu Cys Met
245 250 255
Pro Pro Lys Met Glu Thr Ser Phe Arg Lys Ala Ile Gly Val Pro Glu
260 265 270
Gly Ile Leu Leu Val Thr Gly Pro Thr Gly Ser Gly Lys Thr Thr Thr
275 280 285
Leu Tyr Ser Val Ile Gln His Leu Ser Gly Pro Phe Thr Asn Ile Met
290 295 300
Thr Ile Glu Asp Pro Pro Glu Tyr Lys Leu Pro Gly Val Ala Gln Ile
305 310 315 320
Ala Val Lys Pro Lys Ile Gly Leu Thr Phe Ser Lys Gly Leu Arg His
325 330 335
Leu Leu Arg Gln Asp Pro Asp Val Leu Met Val Gly Glu Ile Arg Asp
340 345 350
Gln Glu Thr Ala Glu Ile Ala Ile Gln Ala Ala Leu Thr Gly His Leu
355 360 365
Val Val Ser Thr Leu His Thr Asn Asp Ala Val Ser Ala Ile Pro Arg
370 375 380
Leu Leu Asp Met Gly Val Glu Pro Tyr Leu Leu Ser Ala Thr Met Ile
385 390 395 400
Gly Leu Ser Leu Asn Asp Ser Ser Val Glu Phe Val Arg Ile Ala Lys

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405 410 415
Asn Ser Val Trp Pro Met Cys Lys Asn Arg Leu Tyr
420 425

<210>890
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<212>PRT
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<400>890
Cys Cys Phe Cys Asn Pro Ala Ser Phe Arg His Gly Ser Arg Ala Leu
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Phe Ile Ile Arg Asn Asn Asp Arg Ala Val Ala Gln Arg Leu Val Arg
20 25 30
Arg Ile Cys Thr His Cys Lys Glu Phe Cys Val Ala Asp Val Gln Glu
35 40 45
Gln Ala Leu Leu Arg Ala Leu Gly Lys Asp Pro Phe Ala Pro Leu Cys
50 55 60
Lys Gly Arg Gly Cys Ser Gln Cys Phe Arg Ser Gly Tyr Lys Gly Arg
65 70 75 80
Gln Gly Ile Tyr Glu Phe Val Asp Val Thr Thr Thr Leu Arg Ser Glu
85 90 95
Ile Ala Leu Gly Arg Pro Tyr His Ile Leu Arg Gly Val Ala Glu Arg
100 105 110
Glu Gly Tyr Cys Pro Leu Leu Glu His Gly Val Glu Leu Ala Leu Ala
115 120 125
Gly Glu Thr Thr Leu Ser Glu Val Leu Arg Val Ala Lys Arg Ser Glu
130 135 140

<210>891
<211>381
<212>PRT
<213>Chlamydia trachomatis
<400>891
Leu Pro Ser Ala Arg Ala Trp Ser Arg Thr Gly Ser Cys Trp Gly Asp
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20 25 30
Gly Asp Met Ala Arg Phe Leu Cys Thr Tyr Leu Asp Gln Ser Glu Lys
35 40 45
Lys Arg Arg Ser Phe Val Glu Ala Phe His Gln Arg Glu Ala Arg Glu
50 55 60
Leu Leu Ala Ala Gln Gly Ala Arg Ile Leu Asp Ile Arg Lys Val Arg
65 70 75 80
Glu Arg Asn Tyr Arg Val Thr Thr Thr Glu Leu Val Ile Phe Thr Lys
85 90 95
Gln Leu Ala Leu Leu Leu Arg Ser Gly Ile Ser Leu Tyr Asp Ala Leu
100 105 110
Thr Ser Leu Arg Asp Gln Tyr Gln Gly His Ala Leu Ala Gly Val Leu
115 120 125
Thr Ser Leu Met Glu Ala Leu Arg Ser Gly Gly Val Phe Ser Glu Ala
130 135 140
Leu Ala Arg Leu Pro His Ile Phe Asp Ser Phe Tyr Gln Asn Ser Val
145 150 155 160
Arg Ser Gly Glu Ser Ile Gly Asn Leu Glu Gly Ala Leu Met Asn Ile
165 170 175
Ile Lys Val Leu Glu Glu Lys Glu Lys Leu Ser Lys Ser Leu Ala Ala
180 185 190
Ala Leu Ser Tyr Pro Ala Ile Leu Leu Val Phe Ser Cys Ala Val Val
195 200 205
Val Phe Phe Leu Ile Gly Val Ile Pro Thr Leu Lys Glu Thr Phe Glu
210 215 220
Asp Met Glu Met Thr Arg Leu Thr Lys Ala Val Phe Ser Cys Ser Thr
225 230 235 240

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Trp Phe Cys Arg Tyr Lys Phe Leu Val Leu Leu Gly Gly Ile Gly Gly
                245                 250                 255
Ala Ile Ser Leu Arg Ile Val Trp Lys Lys Arg Ile Gly Lys Arg Thr
            260                 265                 270
Leu Glu Ala Ile Ile Lys Lys Ile Pro Ile Leu Arg Ser Leu Val Ile
        275                 280                 285
Lys Ile Gly Phe Cys Arg Phe Cys Ser Val Thr Ser Ala Val Leu Gln
    290                 295                 300
Gly Gly Gly Asn Leu Ile Glu Ala Leu Thr Leu Gly Cys Glu Ala Val
305                 310                 315                 320
Ser Gln Asp Phe Leu Arg Glu Glu Leu Gln Glu Val Ile Gln Ala Val
                325                 330                 335
Val Arg Gly Gly Ser Leu Ser Arg Glu Leu Ser His Arg Thr Trp Thr
            340                 345                 350
Pro Lys Leu Val Ile Gly Met Val Ala Leu Gly Glu Glu Ser Gly Asp
        355                 360                 365
Leu Ala Val Val Phe Ala His Val Ala Gln Ile Tyr Arg
    370                 375                 380
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            20                  25                  30
Asn Val Arg Ala Ser Ile Lys Phe Pro Pro Pro Cys Lys Thr Ala Asp
        35                  40                  45
Val Thr Glu Gln Asn Arg Gln Asn Pro Ile Leu Ile Thr Arg Leu Arg
    50                  55                  60
Lys Ile Gly Ile Phe Leu Ile Ile Ala Ser Arg Val Leu Phe Pro Ile
65                  70                  75                  80
Arg Phe Phe Gln Thr Met Arg Arg Asp Ile Ala Pro Pro Ile Pro Pro
                85                  90                  95
Ser Lys Thr Arg Asn Leu Tyr Leu Gln Asn His Val Leu His Glu Lys
            100                 105                 110
Thr Ala Phe Val Ser Leu Val Ile Ser Ile Ser Ser Lys Val Ser Phe
        115                 120                 125
Asn Val Gly Met Thr Pro Ile Arg Lys Asn Thr Thr Thr Ala Gln Glu
    130                 135                 140
Asn Thr Asn Lys Ile Ala Gly
145                 150
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<213>Chlamydia trachomatis
<400>893
Gln Ala Val Phe Lys Arg Phe Asn Tyr Arg Arg Glu Thr Val Lys Lys
  1               5                  10                  15
Thr Lys Lys Arg Lys Gln Ser Ile Thr Leu Val Glu Met Met Val Val
            20                  25                  30
Ile Thr Leu Ile Gly Ile Ile Gly Gly Ala Leu Ala Phe Asn Met Arg
        35                  40                  45
Gly Ser Leu Gln Lys Gly Lys Ile Phe Gln Thr Glu Gln Asn Cys Ala
    50                  55                  60
Arg Val Tyr Asp Val Leu Met Met Glu Tyr Ala Ser Gly Asn Leu Ser
65                  70                  75                  80
Leu Lys Glu Val Ile Ala Asn Lys Glu Ala Ile Leu Glu Asp Ser Ala
                85                  90                  95
Trp Cys Lys Glu Ile Lys Lys Leu Leu Lys Asp Ala Trp Gly Glu Asp
```

```
            100                 105                 110
Leu Leu Val Lys Met Asn Asp Lys Gly Asp Asp Ile Val Val Phe Ser
        115                 120                 125
Lys Lys Val Arg Asn Glu Gln Arg Gly
    130                 135
<210>894
<211>203
<212>PRT
<213>Chlamydia trachomatis
<400>894
Arg Arg Arg Gln Ala Phe Met Phe Gly Arg Arg Tyr Gly Gly Leu Ile
  1               5                  10                  15
Pro Trp Pro Glu Lys Gly Ser Arg Cys Thr Glu Val Phe Met Phe Arg
             20                  25                  30
Lys Ile Lys Lys Lys Arg Ala Phe Leu Leu Ser Glu Leu Leu Ile Ala
         35                  40                  45
Cys Val Leu Ile Ser Leu Leu Leu Gly Ser Leu Gly Tyr Trp Thr Arg
     50                  55                  60
Arg Ile Trp Ile Ser His Lys Glu Lys Glu His Val Tyr Arg Ile Phe
 65                  70                  75                  80
Leu Asn Glu Ser Lys Thr Tyr Arg Phe Leu Arg Gly Thr Phe Leu Ser
                 85                  90                  95
Thr Ile Ala Met Glu Ala Gln Glu Glu Leu Val Phe Ser Phe Asp Arg
            100                 105                 110
Gly Val Tyr Val Asp Pro His Leu Ala Gly Val Val Gln Gly Thr Leu
        115                 120                 125
His Tyr Asp Pro Ile Thr Gln Glu Ile Ser Leu Ile Val Ala Ser Glu
    130                 135                 140
Arg Glu Glu Ala Arg Gln Glu Lys Ile Ser Leu Trp Thr His Val Leu
145                 150                 155                 160
Ser Met Glu Trp Lys Val Leu Arg Tyr Gln Gly Leu Gly Glu Gly Pro
                165                 170                 175
Asp Arg Val Tyr Leu Thr Leu Val Arg Lys Val Gly Ala Leu Pro Pro
            180                 185                 190
Arg Thr Leu Ser Tyr Ile Phe Ala Val Gly Arg
        195                 200
<210>895
<211>203
<212>PRT
<213>Chlamydia trachomatis
<400>895
Val Ala Thr Arg Thr Val Cys Ala Val Arg Ala His Ser Ser Arg Cys
  1               5                  10                  15
Gly Val Pro Gly Lys Lys Ala Leu Pro Ala Gln Lys Glu Glu Asn Asn
             20                  25                  30
Ser Pro Thr Pro Lys Pro Gly Ser Glu Trp Pro Glu Asn Gly Ser Pro
         35                  40                  45
Pro Glu Lys Glu Thr Arg Trp Val Glu Lys Lys Pro Lys Ser Asn Lys
     50                  55                  60
Thr Thr Arg Ser Leu Leu His Phe Leu Asn Tyr Glu Glu Lys Asn Thr
 65                  70                  75                  80
Asn Gln Gly Arg Leu Asn Leu Leu Phe Thr Asp Pro Val Ile Leu Gln
                 85                  90                  95
Ala Phe Ile Asn Asn Ser Lys Ala Tyr Ser Glu Leu Glu Arg Val Arg
            100                 105                 110
Gln Glu Val Trp Glu Ser Ala Arg Gln Gln Glu Leu Ala Ile Lys Ala
        115                 120                 125
Tyr Gly Gln Ala Ala Ala Leu Glu Ile Phe Lys Thr Arg Thr Asp Phe
    130                 135                 140
Arg Thr Glu Leu Gln Asp Lys Thr Gln Val Ile Leu His Arg Tyr Asp
145                 150                 155                 160
```

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Leu Leu Ser Leu Leu Asn Lys Lys Val Phe Asp Tyr Thr Leu Gly Thr
165 170 175
Ala Gly Asp Tyr Ile Phe Val Val Asp Pro Glu Asn Glu Gly Val Asn
180 185 190
Arg Ser Arg Cys Val Ser Arg Arg Lys Thr Asn
195 200

<210>896
<211>291
<212>PRT
<213>Chlamydia trachomatis
<400>896
Ile Ala Met Ala Thr Leu Pro Glu Val Leu Ser Gly Leu Gly Ser Ser
1 5 10 15
Tyr Ile Asp Tyr Ile Phe Gln Lys Pro Ala Asp Tyr Val Trp Thr Val
20 25 30
Phe Leu Leu Leu Ala Ala Arg Ile Leu Ser Met Leu Ser Ile Ile Pro
35 40 45
Phe Leu Gly Ala Lys Leu Phe Pro Ser Pro Ile Lys Ile Gly Ile Ala
50 55 60
Leu Ser Trp Met Gly Leu Leu Leu Pro Gln Val Ile Gln Asp Ser Thr
65 70 75 80
Ile Val His Tyr Gln Asp Leu Asp Ile Phe Tyr Ile Leu Leu Ile Lys
85 90 95
Glu Ile Leu Ile Gly Val Leu Ile Gly Phe Leu Phe Ser Phe Pro Phe
100 105 110
Tyr Ala Ala Gln Ser Ala Gly Ser Phe Ile Thr Asn Gln Gln Gly Ile
115 120 125
Gln Gly Leu Glu Gly Ala Thr Ser Leu Val Ser Ile Glu Gln Thr Ser
130 135 140
Pro His Gly Ile Phe Tyr His Tyr Phe Val Thr Ile Val Phe Trp Leu
145 150 155 160
Ala Gly Gly His Arg Ile Ile Leu Ser Val Leu Leu Gln Ser Leu Glu
165 170 175
Ile Ile Pro Leu His Ala Val Phe Pro Glu Ser Met Met Ser Leu Arg
180 185 190
Ala Pro Met Trp Ile Ala Ile Leu Lys Met Cys Gln Leu Cys Leu Ile
195 200 205
Met Thr Ile Gln Leu Ser Ala Pro Ala Ala Val Ala Met Leu Met Ser
210 215 220
Asp Leu Phe Leu Gly Ile Ile Asn Arg Met Ala Pro Gln Val Gln Val
225 230 235 240
Ile Tyr Leu Leu Ser Ala Leu Lys Ala Phe Met Gly Leu Leu Phe Leu
245 250 255
Thr Leu Ala Trp Trp Phe Ile Val Lys Gln Ile Asp Tyr Phe Thr Leu
260 265 270
Ala Trp Phe Lys Glu Ile Pro Thr Met Leu Phe Gly Ala His Pro Pro
275 280 285
Lys Val Leu
290

<210>897
<211>99
<212>PRT
<213>Chlamydia trachomatis
<400>897
Ile Arg Asp Phe Pro Met Leu Met Leu Ala Thr Ser Phe Lys Ser Ile
1 5 10 15
Leu Phe Glu Tyr Ser Tyr Glu Ala Leu Leu Leu Ile Leu Ile Ile Ser
20 25 30
Ala Pro Pro Ile Ile Leu Ala Ser Val Val Gly Ile Met Val Ala Ile
35 40 45
Phe Gln Ala Ala Thr Gln Ile Gln Glu Gln Thr Phe Ala Phe Ala Ile

```
     50                  55                  60
Lys Leu Val Val Ile Phe Gly Thr Leu Met Ile Thr Gly Gly Trp Leu
 65                  70                  75                  80
Cys Ser Met Ile Leu Arg Phe Ala Ala Gln Ile Phe Gln Asn Phe Tyr
                85                  90                  95
Lys Trp Lys
```

<210>898
<211>309
<212>PRT
<213>Chlamydia trachomatis
<400>898

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Leu Asp Phe Met Arg Leu Ile Val Arg Ile Phe Phe Phe Leu Cys Ile
  1               5                  10                  15
Leu Ser Ala Pro Tyr Ser Phe Ala Ser Thr Cys Ser Ala Ala Gln Gly
            20                  25                  30
Ala Ser Ser Cys Leu Pro Cys Ala Thr Ala Pro Gln Gln Glu Leu Pro
        35                  40                  45
Ala Ser Pro Glu Lys Thr Glu Lys Pro Phe Arg Cys Pro Ser Tyr Arg
    50                  55                  60
Pro Thr Val Glu Ala Gln His Leu Leu Pro Pro Gln Glu Asp Leu Ser
65                  70                  75                  80
Ser Gly Ala Phe Ser Glu Thr Tyr Pro Asp Leu Thr Thr Gln Ala Val
                85                  90                  95
Ile Leu Leu Phe Leu Ala Leu Ser Pro Phe Leu Val Met Leu Leu Thr
            100                 105                 110
Ser Tyr Leu Lys Ile Ile Ile Thr Leu Val Leu Leu Arg Asn Ala Leu
        115                 120                 125
Gly Val Gln Gln Thr Pro Pro Ser Gln Val Leu Asn Gly Ile Ala Leu
    130                 135                 140
Ile Leu Ser Ile Tyr Val Met Phe Pro Thr Gly Val Ala Met Tyr His
145                 150                 155                 160
Asp Ala Lys Lys Gly Ile Glu Ser Ser Ala Val Pro Arg Asp Leu Phe
                165                 170                 175
Ser Ala Glu Gly Ala Glu Thr Val Phe Val Ala Leu Asn Lys Ser Lys
            180                 185                 190
Glu Pro Leu Arg Ser Phe Leu Ile Lys Asn Thr Pro Lys Pro Gln Ile
        195                 200                 205
Gln Ser Phe Tyr Lys Ile Ser Gln Lys Thr Phe Pro Pro Glu Leu Arg
    210                 215                 220
Gln Gln Leu Thr Pro Ser Asp Phe Met Ile Ile Ile Pro Ala Phe Ile
225                 230                 235                 240
Met Gly Gln Ile Lys Asn Ala Phe Glu Ile Gly Val Leu Ile Tyr Leu
                245                 250                 255
Pro Phe Phe Val Ile Asp Leu Val Thr Ala Asn Val Leu Val Ala Met
            260                 265                 270
Gln Met Met Met Leu Ser Pro Leu Ser Ile Ser Leu Pro Leu Lys Leu
        275                 280                 285
Leu Leu Val Val Met Val Asp Gly Trp Thr Leu Leu Leu Glu Gly Leu
    290                 295                 300
Met Ile Ser Phe Lys
305
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<210>899
<211>93
<212>PRT
<213>Chlamydia trachomatis
<400>899

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Gln Val Leu Ser Phe Tyr Arg Trp Ser Ile Arg Trp Thr Thr Lys Arg
  1               5                  10                  15
Leu Phe Ser Phe Phe Trp Arg Cys Trp Lys Phe Leu Leu Arg Ser Gly
            20                  25                  30
```

```
Arg Ala Arg Lys Ala Arg Arg Gly Ala Leu Cys Cys Gly Thr Ser Thr
          35                  40                  45
Gly Glu Ala Ile Gly Ser Ala Lys Asn Ala Glu Lys Glu Glu Asn Ser
      50                  55                  60
Asn Asn Gln Ser His Lys Ile Gln Tyr Leu Val Phe Leu Ala Leu Arg
 65                  70                  75                  80
Leu Ile Cys Cys Arg Ser Val Arg Arg Phe Phe Met Phe
                 85                  90
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<210>900
<211>246
<212>PRT
<213>Chlamydia trachomatis
<400>900

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Ser Asn Glu Gln Arg Ser Glu Val Pro Cys Leu Leu Ala Leu Pro Lys
  1               5                  10                  15
Asp Pro Tyr Leu Val Arg Arg Met Lys Phe Phe Ser Leu Ile Tyr Lys
             20                  25                  30
Asp Gln Glu Val Val Pro Asn Lys Lys Val Leu Ser Pro Asp Ala Tyr
          35                  40                  45
Thr Ala Val Leu Thr Ala Gln Glu Leu Leu Glu Lys Thr Gln Glu Asp
      50                  55                  60
Cys Glu Ala Tyr Thr Gln Asn Thr His Glu Glu Cys Ala Lys Leu Arg
 65                  70                  75                  80
Glu Glu Ala Lys Asn Gln Gly Phe Gln Glu Gly Ser Lys Ala Trp Ser
                 85                  90                  95
Lys Gln Leu Ala Phe Leu Ile Thr Glu Thr Gln Ala Met Arg Glu Gln
            100                 105                 110
Ile Lys Ala Ser Leu Val Pro Leu Ala Ile Ala Ser Val Lys Lys Ile
        115                 120                 125
Ile Gly Lys Glu Leu Glu Thr Lys Pro Glu Thr Val Val Ser Ile Ile
    130                 135                 140
Ser Glu Ser Leu Lys Asp Leu Thr Gln Asn Lys Arg Ile Val Ile His
145                 150                 155                 160
Ile Asn Pro Gln Asp Leu Ala Ile Val Glu Gln His Arg Pro Glu Leu
                165                 170                 175
Lys Lys Leu Val Glu Tyr Ala Asp Val Leu Leu Leu Ser Pro Lys Ala
            180                 185                 190
Ser Val Ser Pro Gly Gly Cys Ile Ile Glu Thr Glu Thr Gly Ile Val
        195                 200                 205
Asn Ala Gln Leu Asp Val Gln Leu Ala Ala Leu Glu Gln Ala Phe Ser
    210                 215                 220
Ala Ile Leu Lys His Lys Lys Pro Ala Asp Ala Ser Thr Thr Asp Gln
225                 230                 235                 240
Pro Gln Ser Lys Lys Asp
                245
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<210>901
<211>278
<212>PRT
<213>Chlamydia trachomatis
<400>901

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Val Thr Ala Asn Thr Phe Gly Ile Leu Asn Ile Leu Met Lys Gln Ala
  1               5                  10                  15
Lys Ala Asp Asp Leu Ala Gln Phe Leu Pro Glu His Leu Leu Leu Asp
             20                  25                  30
Ser Pro His His Gln Asp Ile Pro Leu Gln Ser Leu Ser Phe Asn Met
          35                  40                  45
Arg Trp Leu Ala Thr Ile His Pro Ser Trp Ile Ser Val Ala Met Lys
      50                  55                  60
Glu Phe Pro Pro Val Val Gln Ser Gln Leu Leu Ala Trp Leu Pro Leu
 65                  70                  75                  80
Pro Leu Thr Gln Glu Leu Leu Pro Leu Leu Asp Ser Gly Val Thr Pro
```

```
                85                  90                  95
Ala Thr Lys Arg Cys Leu Asp Phe Gly Ala Phe Tyr Leu Leu Asp Leu
            100                 105                 110
Leu Ser Lys Lys Val Arg Pro Pro Gly Ile Thr Glu Glu Ile Phe Leu
        115                 120                 125
Pro Ala Ser Pro Phe Asn Ala Met Leu Tyr Tyr Val Gly Pro Thr Lys
    130                 135                 140
Met Ala Leu Ile Asn Cys Leu Gly Leu Tyr Thr Leu Ala Gln Glu Met
145                 150                 155                 160
Arg Asn Val Val Asp Arg Val Val Ile Asp Arg Val Gln Arg Val Leu
                165                 170                 175
Ser Glu Thr Glu Arg Met Phe Leu Asn Tyr Cys Lys Thr His Pro Met
            180                 185                 190
Lys His Leu Glu Pro Thr Ala Phe Leu Ala Ser Trp Glu Glu Asp Gln
        195                 200                 205
Ala Leu Arg His Phe Ile His Val Gln Gly Leu Arg Phe Leu Ala Arg
    210                 215                 220
Ala Leu Ala Lys Glu Asp Ser Ser Phe Leu Trp Tyr Phe Ile Arg Arg
225                 230                 235                 240
Leu Asp Val Gly Arg Gly Tyr Ile Phe Glu Lys Ala Leu Gln Ser Ser
                245                 250                 255
Ile Asp Ser Pro His Asn Glu Tyr Phe Arg Glu Arg Leu Glu His Cys
            260                 265                 270
Ile Ser Ile Leu Val Gln
        275
<210>902
<211>325
<212>PRT
<213>Chlamydia trachomatis
<400>902
Met Phe Arg Tyr Thr Leu Ser Arg Ser Leu Phe Phe Ile Leu Ala Leu
  1                 5                  10                  15
Phe Phe Cys Ser Ala Cys Asp Ser Arg Ser Met Ile Thr His Gly Leu
             20                  25                  30
Ser Gly Arg Asp Ala Asn Glu Ile Val Val Leu Leu Val Ser Lys Gly
         35                  40                  45
Val Ala Ala Gln Lys Val Pro Gln Ala Ala Ser Ser Thr Gly Gly Ser
     50                  55                  60
Gly Glu Gln Leu Trp Asp Ile Ser Val Pro Ala Ala Gln Ile Thr Glu
 65                  70                  75                  80
Ala Leu Ala Ile Leu Asn Gln Ala Gly Leu Pro Arg Met Lys Gly Thr
                 85                  90                  95
Ser Leu Leu Asp Leu Phe Ser Lys Gln Gly Leu Val Pro Ser Glu Met
            100                 105                 110
Gln Glu Lys Ile Arg Tyr Gln Glu Gly Leu Ser Glu Gln Met Ala Thr
        115                 120                 125
Thr Ile Arg Lys Met Asp Gly Ile Val Asp Ala Ser Val Gln Ile Ser
    130                 135                 140
Phe Ser Pro Glu Glu Asp Gln Arg Pro Leu Thr Ala Ser Val Tyr Ile
145                 150                 155                 160
Lys His Arg Gly Val Leu Asp Asn Pro Asn Ser Ile Met Val Ser Lys
                165                 170                 175
Ile Lys Arg Leu Val Ala Ser Ala Val Pro Gly Leu Tyr Pro Glu Asn
            180                 185                 190
Val Ser Val Val Ser Asp Arg Ala Ser Tyr Ser Asp Ile Thr Ile Asn
        195                 200                 205
Gly Pro Trp Gly Leu Ser Asp Glu Met Asp Tyr Val Ser Val Trp Gly
    210                 215                 220
Ile Ile Leu Ala Lys His Ser Leu Thr Lys Phe Arg Leu Val Phe Tyr
225                 230                 235                 240
Phe Leu Ile Leu Leu Leu Phe Ile Leu Ser Cys Gly Leu Leu Trp Val
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                245                 250                 255
Ile Trp Lys Thr His Thr Leu Ile Ser Ala Leu Gly Gly Thr Lys Gly
            260                 265                 270
Phe Phe Asp Pro Ala Pro Tyr Ser Gln Leu Ser Phe Thr Gln Asn Lys
        275                 280                 285
Pro Ala Pro Lys Glu Thr Pro Gly Ala Ala Glu Gly Ala Glu Ala Gln
    290                 295                 300
Thr Ala Ser Glu Gln Pro Pro Lys Glu Asn Ala Glu Lys Gln Glu Glu
305                 310                 315                 320
Asn Asn Glu Asp Ala
                325
<210>903
<211>319
<212>PRT
<213>Chlamydia trachomatis
<400>903
Lys Met Thr Asp Ser Glu Ser Pro Thr Pro Lys Lys Ser Ile Pro Ala
  1                 5                  10                  15
Arg Phe Pro Lys Trp Leu Arg Gln Lys Leu Pro Leu Gly Arg Val Phe
            20                  25                  30
Ala Gln Thr Asp Asn Thr Ile Lys Asn Lys Gly Leu Pro Thr Val Cys
        35                  40                  45
Glu Glu Ala Ser Cys Pro Asn Arg Thr His Cys Trp Ser Arg His Thr
    50                  55                  60
Ala Thr Tyr Leu Ala Leu Gly Asp Ala Cys Thr Arg Arg Cys Gly Phe
65                  70                  75                  80
Cys Asp Ile Asp Phe Thr Arg Asn Pro Leu Pro Pro Asp Pro Glu Glu
                85                  90                  95
Gly Ala Lys Ile Ala Glu Ser Ala Lys Ala Leu Gly Leu Lys His Ile
            100                 105                 110
Val Ile Thr Met Val Ser Arg Asp Asp Leu Glu Asp Gly Gly Ala Ser
        115                 120                 125
Ala Leu Val His Ile Ile Glu Thr Leu His Thr Glu Leu Pro Thr Ala
    130                 135                 140
Thr Ile Glu Val Leu Ala Ser Asp Phe Glu Gly Asn Ile Ala Ala Leu
145                 150                 155                 160
His His Leu Leu Asp Thr His Ile Ala Ile Tyr Asn His Asn Val Glu
                165                 170                 175
Thr Val Glu Arg Leu Thr Pro Phe Val Arg His Lys Ala Thr Tyr Arg
            180                 185                 190
Arg Ser Leu Met Met Leu Glu Asn Ala Ala Lys Tyr Leu Pro Asn Leu
        195                 200                 205
Met Thr Lys Ser Gly Ile Met Val Gly Leu Gly Glu Gln Glu Ser Glu
    210                 215                 220
Val Lys Gln Thr Leu Lys Asp Leu Ala Asp His Gly Val Lys Ile Val
225                 230                 235                 240
Thr Ile Gly Gln Tyr Leu Arg Pro Ser Arg Arg His Ile Pro Val Lys
                245                 250                 255
Ser Tyr Val Ser Pro Glu Thr Phe Asp Tyr Tyr Arg Ser Val Gly Glu
            260                 265                 270
Ser Leu Gly Leu Phe Ile Tyr Ala Gly Pro Phe Val Arg Ser Ser Phe
        275                 280                 285
Asn Ala Asp Ser Val Phe Glu Ala Met Arg Gln Gly Lys Pro Gln Pro
    290                 295                 300
Leu Arg Tyr Phe Arg Thr Lys Ile Ser His Ile Thr Cys Ser Phe
305                 310                 315
<210>904
<211>298
<212>PRT
<213>Chlamydia trachomatis
<400>904
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Thr Ser Lys Lys Ser Leu Lys Lys Trp Pro Leu Leu Ala Glu Gly Val
 1               5                  10                  15
Ile Gly Cys Glu Phe Ala Ser Leu Phe His Thr Leu Gly Ser Glu Val
            20                  25                  30
Ser Val Ile Glu Ala Ser Ser Gln Ile Leu Ala Leu Asn Asn Pro Asp
        35                  40                  45
Ile Ser Lys Thr Met Phe Asp Lys Phe Thr Arg Gln Gly Leu Arg Phe
    50                  55                  60
Val Leu Glu Ala Ser Val Ser Asn Ile Glu Asp Ile Gly Asp Arg Val
65                  70                  75                  80
Arg Leu Thr Ile Asn Gly Asn Val Glu Glu Tyr Asp Tyr Val Leu Val
                85                  90                  95
Ser Ile Gly Arg Arg Leu Asn Thr Glu Asn Ile Gly Leu Asp Lys Ala
            100                 105                 110
Gly Val Ile Cys Asp Glu Arg Gly Val Ile Pro Thr Asp Ala Thr Met
        115                 120                 125
Arg Thr Asn Val Pro Asn Ile Tyr Ala Ile Gly Asp Ile Thr Gly Lys
    130                 135                 140
Trp Gln Leu Ala His Val Ala Ser His Gln Gly Ile Ile Ala Ala Arg
145                 150                 155                 160
Asn Ile Gly Gly His Lys Glu Glu Ile Asp Tyr Ser Ala Val Pro Ser
                165                 170                 175
Val Ile Phe Thr Phe Pro Glu Val Ala Ser Val Gly Leu Ser Pro Thr
            180                 185                 190
Ala Ala Gln Gln Gln Lys Ile Pro Val Lys Val Thr Lys Phe Pro Phe
        195                 200                 205
Arg Ala Ile Gly Lys Ala Val Ala Met Gly Glu Ala Asp Gly Phe Ala
    210                 215                 220
Ala Ile Ile Ser His Glu Thr Thr Gln Gln Ile Leu Gly Ala Tyr Val
225                 230                 235                 240
Ile Gly Pro His Ala Ser Ser Leu Ile Ser Glu Ile Thr Leu Ala Val
                245                 250                 255
Arg Asn Glu Leu Thr Leu Pro Cys Ile Tyr Glu Thr Ile His Ala His
            260                 265                 270
Pro Thr Leu Ala Glu Val Trp Ala Glu Ser Ala Leu Leu Ala Val Asp
        275                 280                 285
Thr Pro Leu His Met Pro Pro Ala Lys Lys
    290                 295
<210>905
<211>212
<212>PRT
<213>Chlamydia trachomatis
<400>905
Met Asn Glu Ala Phe Asp Cys Val Val Ile Gly Ala Gly Pro Gly Gly
 1               5                  10                  15
Tyr Val Ala Ala Ile Thr Ala Ala Gln Ala Gly Leu Lys Thr Ala Leu
            20                  25                  30
Ile Glu Lys Arg Glu Ala Gly Gly Thr Cys Leu Asn Arg Gly Cys Ile
        35                  40                  45
Pro Ser Lys Ala Leu Leu Ala Gly Ala Glu Val Val Thr Gln Ile Arg
    50                  55                  60
His Ala Asp Gln Phe Gly Ile His Val Glu Gly Phe Ser Ile Asn Tyr
65                  70                  75                  80
Pro Ala Met Val Gln Arg Lys Asp Ser Val Val Arg Ser Ile Arg Asp
                85                  90                  95
Gly Leu Asn Gly Leu Ile Arg Ser Asn Lys Ile Thr Val Phe Ser Gly
            100                 105                 110
Xaa Gly Ser Leu Ile Ser Ser Thr Glu Val Lys Ile Leu Gly Glu Asn
        115                 120                 125
Pro Ser Val Ile Lys Ala His Ser Ile Ile Leu Ala Thr Gly Ser Glu
    130                 135                 140
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Pro Arg Ala Phe Pro Gly Ile Pro Phe Ser Ala Glu Ser Pro Arg Ile
145                 150                 155                 160
Leu Cys Ser Thr Gly Val Leu Asn Leu Lys Glu Ile Pro Gln Lys Met
                165                 170                 175
Ala Ile Ile Gly Gly Arg Cys Asp Arg Leu Arg Ile Arg Phe Leu Ile
            180                 185                 190
Pro Tyr Val Arg Leu Arg Ser Phe Cys Asp Arg Ser Lys Leu Ser Asn
        195                 200                 205
Pro Cys Phe Glu
    210
<210>906
<211>163
<212>PRT
<213>Chlamydia trachomatis
<400>906
Arg Xaa Asp Leu Met Pro Phe Ala Lys Glu Ala Asp Leu Gln Arg Thr
  1               5                  10                  15
Cys Trp Lys Cys Glu Gly Ser Val Ser Ala Cys Met Pro Gln Cys Pro
             20                  25                  30
Tyr Cys Ser Ala Phe Leu Gln Asp Pro Pro Val Thr Ser Lys Gly Phe
         35                  40                  45
Ser Ser Cys His Ile Thr Phe Pro Ser Glu Ala Ser Lys Lys Asn Gly
     50                  55                  60
Asp Ser Asp Leu Phe Ala Val Ser Ser Glu Asp Trp Glu Ala Val Leu
 65                  70                  75                  80
Asn Ser Gln Asn Thr Phe Glu Glu Pro Val Gln Glu Pro Ala Pro Ser
                85                  90                  95
Gln Trp Asp Trp Leu Gln Tyr Trp Pro Thr Ala Ala Leu Phe Leu Gly
            100                 105                 110
Cys Gly Phe Leu Thr Phe Ser Leu Met Ile Leu Leu Phe Ser Thr Asp
        115                 120                 125
Ser Gly Leu Val Leu Ser Trp Pro Lys Asn Arg Ser Tyr Ile Tyr Ala
    130                 135                 140
Leu Val Gly Ile Leu Leu Ala Tyr Arg Gly Tyr Arg Ser Leu Pro Glu
145                 150                 155                 160
His Ser Lys

<210>907
<211>1204
<212>PRT
<213>Chlamydia trachomatis
<400>907
Gln Arg Leu Ile Leu Met Ile Leu Asn Ser Leu Ser Met Phe Arg His
  1               5                  10                  15
Gln Ala Thr Arg Phe Leu Gln Asp Asn Arg Asp Ser Ile Ala Val Ser
             20                  25                  30
Phe Ser Lys Asn Thr Tyr Lys Ile Thr Ile Pro Asp Glu Asp Ser Pro
         35                  40                  45
Asp Gly Glu Trp Ile Ser Thr Leu Ser Phe Asn Asp Glu Glu Arg Leu
     50                  55                  60
Ser Phe Ala Ala Cys Ser Cys Pro Asp Gly Asp Cys Cys Glu His Leu
 65                  70                  75                  80
Leu Thr Ala Thr Leu Ala Ala Tyr Asp Pro Thr Glu Gly Ala Leu Leu
                85                  90                  95
His Val Lys Phe Glu Ser Ser Phe Trp Trp Gly Leu Phe Tyr Gln Leu
            100                 105                 110
Phe Leu Ser Lys Ala Pro Leu His Ala Pro Gly Asp Lys Val Tyr Thr
        115                 120                 125
Ile Gln Ser Gln Gln Leu Ser Val Ser Leu Gln Cys Leu Ser Ala Glu
    130                 135                 140
Ala Leu Thr Tyr Trp Leu Pro Ile Val His Thr Ser Pro Glu Pro Gln
```

145 150 155 160
Thr Ile Ser Lys Glu Thr Phe Ser Gln Ser Ala Leu Tyr Arg Ile Ala
165 170 175
Arg Glu Leu Phe Met Phe Ser Gln Lys Gly Ala Ser Leu Val Ile Gln
180 185 190
Glu Asn Pro Gln Gly Phe Pro Ser Leu Phe Ser Leu Gln Trp Glu Gly
195 200 205
Ile Ala Leu Ser Ile Glu Val Leu Asp Val Asp Thr Leu Lys Ala Leu
210 215 220
Phe Pro Leu Leu Glu Phe Ser Gln Thr Ser Leu Tyr Ser Gly Glu Pro
225 230 235 240
Tyr Leu Leu His Asn Val His Val Val Pro Glu Gln Ala Arg Ile Tyr
245 250 255
Phe Thr Lys Glu Tyr Pro Pro Leu Pro Lys Ser Ile Lys Glu Tyr Gln
260 265 270
Glu Thr Val Leu Gly Pro Ile Lys Tyr Phe Ala Glu Ala Lys Lys Cys
275 280 285
Thr Ser Ile Pro Lys Thr Leu Ser Leu Pro Ile His Ile Ile Pro Ala
290 295 300
Leu Asp Arg Ser Phe Arg Glu His Leu Leu Ser Gln Leu Cys Tyr Glu
305 310 315 320
Thr Glu Glu Arg Pro Ile His Tyr Ala Ile His Phe Leu Arg Asp Ala
325 330 335
Ser Leu Ser Phe Ser Ala Tyr Leu Glu Thr Pro Gly Asp Leu Ser Glu
340 345 350
Gly His Ile Ile Tyr Pro Glu Phe Cys Tyr Ile Pro Asn Lys Gly Leu
355 360 365
Leu Ala Val Ser Gly Leu Leu Ser Pro Glu Ser Ser Phe Thr Ile Arg
370 375 380
Ser Asp His Ile Glu Asn Phe Leu Asp Glu Tyr Gly Pro Phe Ile Lys
385 390 395 400
Glu Pro Gly Phe Glu Thr Phe Ser Asn Gln Ser Pro Val Gly Ser Leu
405 410 415
Ser Tyr Asn Val Thr Glu Gln Gly Val Leu Leu Phe His Tyr Asp Thr
420 425 430
Gly Asn Ala Ala Asp Ile Glu Leu Arg Phe Gly Lys Trp Thr Tyr Tyr
435 440 445
Ser Arg Gln Gly Phe Phe Leu Asn Ser Arg Leu Asp Leu Ala Leu Gln
450 455 460
Asp Gly Leu Thr Ile Glu Ala Pro Gln Val Ala Asp Phe Ile Leu Thr
465 470 475 480
His Glu Val Ala Leu Lys Ser Ile Pro Asn Phe Phe Ala Ala Gln Pro
485 490 495
Pro Leu Lys Ser Ile Arg Phe Glu Val His Lys Glu Lys Lys Gly Ser
500 505 510
Gly Ile Tyr Leu Gln Pro Ile Phe Glu Gly Leu Glu His Glu Ser Cys
515 520 525
Arg Leu Phe Gly Gln Phe Leu Tyr Arg Glu Asn Val Gly Phe Ser Leu
530 535 540
Leu Pro Ala Ala Leu Gln Met Leu Cys Gln Ile Pro Thr Glu Ile Pro
545 550 555 560
Ala Asp Gln Val Ala Glu Phe Leu Leu Gln Phe Ser Lys Asp Asp Arg
565 570 575
Met Val Phe Pro Asp Pro Gln Leu Ala Leu Pro Glu Arg Val Glu Leu
580 585 590
Asn Ile Leu Ala Ile His Arg Pro His Pro Ser Ser Pro Leu His Leu
595 600 605
Lys Ile Glu Ile Lys Thr Asn Ile Gly Ser Ile Pro Leu Gly Thr Val
610 615 620
Leu Gln Ala Leu Lys Gly Lys Lys Asp Phe Leu Phe Ser Lys Ala Gly
625 630 635 640

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Phe Leu Asn Leu Asp Asn Cys Leu Phe Val Phe Leu Lys Gln Phe Leu
                645                 650                 655
Ser Ser Gln Arg Tyr Asp Ile Gln Glu Asn Thr Leu Ile Thr Met Val
            660                 665                 670
Thr Asp Ile Phe Lys Leu Asp Ala Leu Ala Pro Met Ile Thr Asp Pro
        675                 680                 685
Asn Ile Gln Ala Ser Glu Glu Asp Leu Ala Tyr Phe Ser Gln Leu Lys
    690                 695                 700
Ser Ala Cys Leu Pro Pro Ile Pro Val Asn Leu Phe Ser Thr Asp His
705                 710                 715                 720
Lys Leu Arg Pro Tyr Gln Asn Ser Gly Leu Leu Trp Leu Trp Phe Leu
                725                 730                 735
Tyr Asn His Arg Leu Ser Gly Leu Leu Cys Asp Glu Met Gly Leu Gly
            740                 745                 750
Lys Thr His Gln Ala Thr Ala Leu Leu Asp Ile Val Ala Gln Thr Ala
        755                 760                 765
Lys Asn Pro Lys Phe Leu Val Val Cys Pro Thr Ser Val Leu Pro His
    770                 775                 780
Trp Glu His Val Leu Ala Ser His Leu Pro Gln Ala Ser Leu Phe Ser
785                 790                 795                 800
Phe His Gly Pro His Lys Pro Lys Thr Leu Pro Asp Cys Asp Ile Leu
                805                 810                 815
Ile Thr Ser Tyr Gly Thr Leu Arg Gln Asn Tyr Ala Leu Phe Tyr Lys
            820                 825                 830
Val Ser Phe Thr Val Ala Val Phe Asp Glu Ile His Thr Ala Lys Asn
        835                 840                 845
Lys Ser Ser Gln Ile His Lys Ile Leu Cys Arg Leu Asp Ala Gln Met
    850                 855                 860
Lys Leu Gly Leu Thr Gly Thr Pro Val Glu Asn Asn Leu Ile Glu Phe
865                 870                 875                 880
Lys Gly Leu Leu Asp Ile Ile Leu Pro Asn Tyr Leu Pro Ser Asp Ala
                885                 890                 895
Leu Phe Lys Arg Leu Phe Thr His Lys Asn Ala Ser Glu Thr Asp Glu
            900                 905                 910
Asp Ile Ile Ser Ser Lys Asp Leu Leu Leu Lys Leu Thr Arg Pro Phe
        915                 920                 925
Ile Leu Arg Arg Thr Lys Lys Leu Val Leu Pro Glu Leu Pro Glu Lys
    930                 935                 940
Val Glu Ser Leu Ile Pro Cys Arg Leu Ser Pro Glu Gln Ser Gln Leu
945                 950                 955                 960
Tyr Ser Ser Thr Leu Glu Lys Glu Lys Cys Gln Ile Gln Gln Leu Glu
                965                 970                 975
Lys Glu Glu Asp Pro Ala Ser Val Asn Tyr Leu His Val Phe Ala Leu
            980                 985                 990
Leu Asn Gln Leu Lys Gln Ile Cys Asp His Pro Ala Val Tyr Phe Lys
        995                 1000                1005
Asp Pro Glu Ser Tyr Lys Asn His Ser Ser Gly Lys Trp Ala Ala Phe
    1010                1015                1020
Val Lys Leu Leu Asn Asp Ser Leu Ala Ser Gly Tyr Lys Val Val Val
1025                1030                1035                1040
Phe Ser Gln Tyr Ile Gln Met Ile Arg Ile Ile Ala Leu Tyr Leu Glu
                1045                1050                1055
Glu His Ala Ile Glu Tyr Ala Leu Val Gln Gly Lys Ser Gln Asn Arg
            1060                1065                1070
Lys Glu Glu Ile Asp Arg Phe Ser Asn Asp Pro Asn Cys Arg Val Phe
        1075                1080                1085
Ile Gly Ser Leu Leu Ala Ala Gly Thr Gly Ile Asn Leu Thr Ala Gly
    1090                1095                1100
Asn Val Val Ile Met Tyr Asp Arg Trp Trp Asn Pro Ala Lys Glu Asn
1105                1110                1115                1120
Gln Ala Leu Asp Arg Val His Arg Ile Gly Gln Lys Asn Thr Val Phe
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1125 1130 1135
Ile Tyr Lys Leu Val Thr Glu Asp Thr Leu Glu Glu His Ile His Tyr
1140 1145 1150
Leu Ile Glu Lys Lys Met Arg Leu Leu Asn Gln Val Thr Thr Thr Gln
1155 1160 1165
Asp Ser Asn Ile Leu His Val Leu Asn Arg Glu Asp Leu Ile Thr Ile
1170 1175 1180
Leu Ser Tyr Lys Asp Glu His Met Leu Ser Glu Glu Val Gln Glu Asp
1185 1190 1195 1200
Ser Gly Asp Ser

<210>908
<211>411
<212>PRT
<213>Chlamydia trachomatis
<400>908
Met His Lys Lys Thr Gln Ser His Ser His Lys Gly Leu Ser Ile Trp
1 5 10 15
Ser Ile Gly Gly Ser Ile Phe Ala Met Phe Phe Gly Ala Gly Asn Val
20 25 30
Val Phe Pro Leu Ala Leu Gly His His Phe Tyr Tyr His Ile Ser Tyr
35 40 45
Ala Cys Leu Gly Met Ile Leu Thr Ala Val Leu Thr Pro Leu Leu Gly
50 55 60
Leu Phe Ala Met Met Leu Tyr Ser Gly Asn Tyr Arg Ser Phe Phe Ala
65 70 75 80 Ile Gly Arg Met
Pro Gly Met Val Leu Met Val Ala Ile Leu Cys
85 90 95
Ile Ile Gly Pro Phe Gly Gly Ile Pro Arg Thr Ile Ala Val Ser Tyr
100 105 110
Asp Thr Leu Ala Ser Leu Gly Asp Lys His Pro Thr Leu Leu Pro Ser
115 120 125
Leu Pro Trp Phe Ser Val Phe Phe Cys Val Leu Val Tyr Leu Phe Val
130 135 140
Cys Lys Leu Ser Lys Leu Ile Gln Trp Leu Gly Ser Val Phe Phe Pro
145 150 155 160
Val Met Leu Gly Thr Leu Ala Trp Leu Ile Ile Lys Gly Leu Leu Leu
165 170 175
Pro Ala His Ala Leu Pro Ser Glu Ser Val Thr Phe Ser Lys Gln Gln
180 185 190
Ala Phe Val Thr Gly Leu Ser Glu Gly Phe Asn Thr Met Asp Leu Leu
195 200 205
Gly Ala Phe Phe Phe Cys Ser Ile Val Leu Val Ser Ile Gln Gln Leu
210 215 220
Met Val Gln Gln Lys His Glu Ser Ser Glu Glu Lys Pro Leu Glu Phe
225 230 235 240
His His Ile Gly Lys Thr Glu Lys Tyr Lys Leu Ala Met Ser Phe Leu
245 250 255
Leu Ala Ala Ala Leu Leu Ser Leu Val Tyr Leu Gly Phe Ala Phe Cys
260 265 270
Ala Ala Arg His Ala Gly Ala Leu Ile Asp Val Gln Arg Gly Gln Ile
275 280 285
Leu Gly Arg Ile Ser Ala Leu Val Val Gly Pro Asn Ser Phe Leu Thr
290 295 300
Gly Leu Ser Val Phe Leu Ala Cys Leu Thr Thr Ala Ile Ala Val Thr
305 310 315 320
Gly Ile Phe Ala Asp Phe Ile Ala Arg Val Val Ser Ser Gln Lys Met
325 330 335
Ser Tyr Ser Asn Ala Leu Ile Val Thr Leu Val Pro Thr Tyr Leu Val
340 345 350
Ser Ile Leu Ser Phe Glu Asn Ile Ser Lys Ile Leu Ile Pro Ile Leu

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        355                 360                 365
Glu Met Ser Tyr Pro Ala Leu Ile Ala Leu Thr Cys Gly Val Ile Ala
    370                 375                 380
Lys Lys Leu Trp Asp Phe Arg His Val Lys Thr Leu Phe Tyr Leu Val
385                 390                 395                 400
Phe Ala Leu Thr Ile Leu Tyr Lys Leu Ser Val
                405                 410
```

<210>909
<211>280
<212>PRT
<213>Chlamydia trachomatis
<400>909

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Ala Ile Ser Thr Pro Ala Leu Ala Cys Ser Leu Leu His Ile Asp Asp
  1               5                  10                  15
Leu Ala Glu Cys Leu Thr Thr Asp Tyr Gly Glu Glu Glu Ala Ile Arg
            20                  25                  30
Leu Ala Lys Ile Phe Leu Glu Glu Ala Pro Cys Ser Ile Arg Val Asn
        35                  40                  45
Thr Arg Arg Ile Ser Val Asp Lys Leu Gln Lys Val Leu Pro Phe Pro
    50                  55                  60
Cys Gln Arg Gly Ala Ala Pro Ser Ser Leu Arg Phe Glu Lys Arg Tyr
65                  70                  75                  80
Pro Leu Gln His Thr Arg Ala Phe Arg Arg Gly Leu Phe Glu Ile Gln
                85                  90                  95
Asp Glu Ser Ser Gln Ile Ile Thr Asn Ala Ile Leu Ile Lys Asp Ser
            100                 105                 110
Asp Thr Val Leu Asp Phe Cys Ala Gly Ala Gly Gly Lys Ser Leu Ile
        115                 120                 125
Phe Ala Gln Arg Ala Arg His Val Thr Leu His Asp Ser Arg Pro Gln
    130                 135                 140
Ala Leu Glu Glu Ala Arg His Arg Ser Pro Arg Ser Gly Ile Lys Asn
145                 150                 155                 160
Phe Thr Ile Pro Ser Gln Pro Leu Lys Lys His Ser Phe Ser Leu Val
                165                 170                 175
Val Val Asp Ala Pro Cys Thr Gly Ser Gly Val Phe Arg Arg His Pro
            180                 185                 190
Glu Lys Lys Leu Leu Phe Ser Lys Gln Leu Leu His Asn Asn Ser Ile
        195                 200                 205
Ala Gln Glu Lys Ile Leu Lys Glu Ala Leu Ala Tyr Val Ala Pro Arg
    210                 215                 220
Gly Arg Leu Val Tyr Ile Thr Cys Ser Leu Met Lys Glu Glu Asn Glu
225                 230                 235                 240
Lys His Thr Ser Trp Met Ala Ser Gln Gly Trp Lys Cys Val Lys Glu
                245                 250                 255
Val Lys Ile Pro Leu Val Ser Arg Gln Gly Asp Ala Phe Phe Ser Ser
            260                 265                 270
His Phe Ile Arg Ser Arg Ser Leu
        275                 280
```

<210>910
<211>116
<212>PRT
<213>Chlamydia trachomatis
<400>910

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Thr Tyr Arg Tyr Thr Arg Ser Gln Thr Arg Arg Pro Met Ile Pro Phe
  1               5                  10                  15
Arg Phe His His Leu Tyr Ile Leu Leu Asp Ser Leu Phe Ser Ser Pro
            20                  25                  30
Ile Gly Glu Ser Asn Arg Val Ala Ala Tyr Phe Lys Glu His Pro Ser
        35                  40                  45
Leu Gly Ser Lys Asp Arg Gln Trp Ile Asn Thr Arg Ile Phe Thr Ile
    50                  55                  60
```

Leu Arg His Arg Arg Leu Leu Glu Ala Leu Val Leu Ala Glu Gly Lys
65 70 75 80
Glu Ile Ser Ala Gln Thr Leu Val Glu Lys Val Glu Glu Gly Val Thr
85 90 95
Glu Asn Ile Glu Gln Phe Gln His Leu Pro Trp Pro Val Arg Tyr Ser
100 105 110
Ile Ser Thr Ile
115

<210>911
<211>437
<212>PRT
<213>Chlamydia trachomatis
<400>911

Met Arg Thr Phe Phe Leu Leu Cys Arg Phe Phe Ile Cys Leu Ala Pro
1 5 10 15
Phe Phe Leu Ser Phe Pro Leu Tyr Ala Asp Pro His Thr Val Leu Thr
20 25 30
Lys Gly Ile Ala Ala Ala Val Val His Ala Asp Ser Gly Ala Ile Leu
35 40 45
Lys Glu Lys Asn Leu Asp His Lys Ile Phe Pro Ala Ser Met Thr Lys
50 55 60
Ile Ala Thr Ala Leu Leu Ile Leu Arg Gln Tyr Pro Asp Val Leu Thr
65 70 75 80
Arg Phe Ile Thr Thr Arg Arg Glu Pro Leu Thr Ser Ile Thr Pro Gln
85 90 95
Ala Lys Gln Gln Ser Gly Tyr Arg Ser Pro Pro His Trp Leu Glu Thr
100 105 110
Asp Gly Met Thr Ile Gln Leu Lys Val Lys Glu Glu Val Ser Gly Trp
115 120 125
Asp Leu Phe His Ala Leu Leu Ile Ser Ser Ala Asn Asp Ala Ala Asn
130 135 140
Val Leu Ala Asp Ala Cys Cys Gln Ser Val Ser Ala Phe Met Arg Gln
145 150 155 160
Leu Asn Glu Phe Leu Arg Glu Leu Gly Cys Gln Asn Thr His Phe Asn
165 170 175
Ser Pro His Gly Leu His His Pro Asp His Tyr Thr Thr Ala Arg Asp
180 185 190
Leu Ser Leu Ile Met Lys Glu Ala Leu Lys Glu Pro Leu Phe Arg Gln
195 200 205
Val Ile His Thr Ala Ser Tyr Thr Met Glu Ala Thr Asn Leu Ser Pro
210 215 220
Glu Arg Val Leu Ser Ser Thr Asn Lys Leu Leu Ser Ser Ser Ser Thr
225 230 235 240
Tyr Phe Tyr Pro Pro Cys Leu Gly Gly Lys Thr Gly Thr Thr Lys Ser
245 250 255
Ala Gly Lys Asn Ile Ile Phe Ala Ala Glu Lys Asn Asn Arg Ser Ile
260 265 270
Ile Val Val Ala Ala Gly Tyr Phe Gly Pro Ala Ala Gln Leu Tyr Gln
275 280 285
Asp Ala Ile Ala Leu Cys Glu Asp Leu Phe Asn Glu Gln Leu Leu Arg
290 295 300
Cys Phe Leu Ile Pro Pro Ala Ser His Tyr Pro Val Pro Thr Arg Phe
305 310 315 320
Gly Thr Val Thr Ala Pro Val Ala Gln Gly Ile Tyr Tyr Asp Phe Tyr
325 330 335
Pro Ser Glu Gly Asp Pro Leu Leu Thr Leu Ser Leu Glu Pro Asn Lys
340 345 350
Ile Ser Phe Pro Ile Arg Lys Gly Asp Leu Leu Gly His Trp Ile Leu
355 360 365
Ser Thr Pro Thr Gly Glu Asn Gln His Ser Ile Pro Phe Leu Ala Glu
370 375 380

Ser Asp Ile Leu Pro Thr Leu Lys Gln Arg Ile Leu Leu Met Ser Leu
385 390 395 400
Arg Ile Leu Thr Thr Tyr Arg Thr Tyr Val Leu Ile Leu Leu Phe Val
405 410 415
Trp Ile Tyr Arg Arg Lys Lys Gln Pro Arg Ala Thr Lys Thr Phe Ser
420 425 430
Asn Pro Phe Phe Ser
435

<210>912
<211>151
<212>PRT
<213>Chlamydia trachomatis
<400>912
Gln Ile Thr Leu Glu Lys Gly Glu Thr Ala Val Ser Leu Asp Phe Leu
1 5 10 15
Glu Asp Phe Phe Arg Arg Ser Ile Thr Asn His Asn Thr Ala Phe Pro
20 25 30
Glu Gly Phe Leu Asp Ile Ser Asp Val Leu Ala Arg Ser Ala Leu Asp
35 40 45
Phe Lys Ala Glu Glu Leu Ala Asp Ser Ala Val Asn Asp Phe Ile Val
50 55 60
Ser Glu Ser Ser Asp Lys Leu Thr Leu Phe Asn Thr Asn Phe Ala Val
65 70 75 80
Trp Leu Val Pro Thr Leu Val Asp Gly Glu Ala Ile Thr Arg Gly Tyr
85 90 95
Ile Ala Leu Asn Gln Gly Glu Glu Phe Ser Pro Glu Leu Thr Phe Glu
100 105 110
Ala Ser Gly Lys Tyr Asn Asn Ser Ser Leu Ile Leu Glu Ala Leu Arg
115 120 125
Arg Tyr Leu Cys Asp Ile Gln Asp Thr Glu Lys Glu Leu Arg Ala Leu
130 135 140
Arg Pro Pro Ser Ile Asp Gly
145 150

<210>913
<211>89
<212>PRT
<213>Chlamydia trachomatis
<400>913
Gln Asn Thr Arg Trp Met Phe Leu Ile Met Arg Glu Leu Thr Thr Gln
1 5 10 15
Met Leu Ser Leu Ser Leu Tyr Thr Gln Asn Leu Thr Thr His Ser Leu
20 25 30
Ile Tyr Pro Ser Ile Glu Gly Gly Arg Lys Ala Arg Asn Ser Phe Ser
35 40 45
Val Ser Trp Ile Ser His Lys Tyr Leu Arg Asn Ala Ser Lys Ile Lys
50 55 60
Leu Glu Leu Leu Tyr Phe Pro Asp Ala Ser Lys Val Asn Ser Gly Glu
65 70 75 80
Asn Ser Ser Pro Trp Phe Lys Ala Met
85

<210>914
<211>152
<212>PRT
<213>Chlamydia trachomatis
<400>914
Leu Tyr Asn Arg Tyr Thr Met Thr Phe Ser Glu Gly Glu Gln Val Phe
1 5 10 15
Pro Ala Thr Leu Gln Asp Leu Tyr Pro Met Leu Asp Phe Val Lys Arg
20 25 30
Ala Gly Val His Cys Asn Cys Thr Gln Lys Lys Leu Ser Lys Leu Glu
35 40 45

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Leu Ala Cys Glu Glu Leu Leu Leu Asn Ile Ile Thr His Ala Tyr Lys
50 55 60
Gly Leu Pro Ser Thr Gly Trp Ile Arg Ile Leu Cys Thr Glu Thr Pro
65 70 75 80
Asp Ala Leu Leu Val Arg Ile Thr Asp His Gly Pro Ala Phe Asn Pro
85 90 95
Ile Thr Ala Ser Pro Asp Ile Met Arg Leu Asp Leu Pro Ile Glu Gln
100 105 110
Arg Arg Ile Gly Gly Leu Gly Ile Phe Leu Ala Lys Tyr Ser Val Asp
115 120 125
Val Phe Asp Tyr Glu Arg Val Asn Asp Thr Asn Val Val Thr Leu Thr
130 135 140
Leu Tyr Thr Lys Pro His Asn Ser
145 150

<210>915
<211>177
<212>PRT
<213>Chlamydia trachomatis
<400>915
Ser Ala Cys Gly Tyr Thr Val Leu Ser Pro His Tyr Val Glu Lys Lys
1 5 10 15
Phe Ser Leu Ser Glu Gly Ile Tyr Val Cys Pro Ile Glu Gly Asp Ser
20 25 30
Leu Gly Asp Leu Val Ser Ser Leu Ser Tyr Glu Leu Glu Lys Arg Gly
35 40 45
Leu His Thr Arg Ser Gln Gly Thr Ser Ser Gly Tyr Val Leu Lys Val
50 55 60
Ser Leu Phe Asn Glu Thr Tyr Glu Asn Ile Gly Phe Ala Tyr Thr Pro
65 70 75 80
Gln Lys Pro Asp Glu Lys Pro Val Lys His Phe Ile Val Ser Asn Glu
85 90 95
Gly Arg Leu Ala Leu Ser Ala Lys Val Gln Leu Ile Lys Asn Arg Thr
100 105 110
Gln Glu Ile Leu Val Glu Lys Cys Leu Arg Lys Ser Val Thr Phe Asp
115 120 125
Phe Gln Pro Asp Leu Gly Thr Ala Asn Ala His Gln Leu Ala Leu Gly
130 135 140
Gln Phe Glu Met His Asn Glu Ala Ile Lys Ser Ala Ser Arg Ile Leu
145 150 155 160
Tyr Ser Gln Leu Ala Glu Thr Ile Val Gln Gln Val Tyr Tyr Asp Leu
165 170 175
Phe

<210>916
<211>281
<212>PRT
<213>Chlamydia trachomatis
<400>916
Thr Lys Ala Ile Arg Asp Leu Thr Asn Ser Leu Phe Leu Phe Tyr Asp
1 5 10 15
Asp Ala Leu Leu Leu Leu Ser Leu Arg Leu Ala Met Lys Val Ile Leu
20 25 30
Arg Ala Leu Cys Leu Phe Leu Val Leu Pro Cys Gly Cys Tyr Ala Arg
35 40 45
Val Pro Ser Phe Glu Pro Phe Arg Gly Ala Ile Ala Pro Asn Arg Tyr
50 55 60
Ile Pro Lys His Ser Pro Glu Leu Tyr Phe Glu Met Gly Asp Lys Tyr
65 70 75 80
Phe Gln Ala Lys Lys Phe Lys Gln Ala Leu Leu Cys Phe Gly Met Ile
85 90 95
Thr His His Phe Pro Glu His Ala Leu His Pro Lys Ala Gln Phe Leu

Sequence Listing

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            100                 105                 110
Val Gly Leu Cys Tyr Leu Glu Met Gly His Pro Asp Leu Ala Asp Lys
        115                 120                 125
Ala Leu Thr Gln Tyr Gln Glu Leu Ala Asp Thr Glu Tyr Ser Glu Gln
    130                 135                 140
Leu Phe Ala Ile Lys Tyr Ser Ile Ala Gln Ser Phe Ala Asn Gly Lys
145                 150                 155                 160
Arg Lys Asn Ile Val Pro Leu Glu Gly Phe Pro Lys Leu Leu Lys Ala
                165                 170                 175
Asp Thr Asp Ala Leu Arg Ile Phe Glu Glu Ile Val Thr Ala Ser Ser
            180                 185                 190
Asp Ala Asp Leu Lys Ala Ser Ala Leu Tyr Ala Lys Gly Ala Leu Leu
        195                 200                 205
Phe Asp Arg Lys Glu Tyr Ser Glu Ala Ile Lys Thr Leu Lys Lys Val
    210                 215                 220
Ser Leu Gln Phe Pro Ser His Ser Leu Ser Pro Glu Ser Phe Thr Leu
225                 230                 235                 240
Ile Ala Lys Ile His Cys Leu Gln Ala Leu Gln Glu Pro Tyr Asn Glu
                245                 250                 255
Gln Tyr Leu Gln Asp Ala Arg Met Lys Gln Gln Leu Tyr Val Asn Asn
            260                 265                 270
Thr Leu Ile Ile Leu Ala Ile Gln Lys
        275                 280
<210>917
<211>293
<212>PRT
<213>Chlamydia trachomatis
<400>917
Lys Gly Trp Val Met Lys Lys Val Val Phe Ile Ala Ala Ile Phe Ser
  1                 5                  10                  15
Ser Ile Val Phe Trp Asp Lys Ile Pro Tyr Ser His Arg Ile Lys Gln
             20                  25                  30
Phe Ala Met Asp Tyr Gly Ile Glu Leu Val Glu Lys Ser Ser Gln Leu
         35                  40                  45
Val Arg Lys Ile Ser Gly Asn Glu Arg Leu Cys Val Phe Glu Arg Arg
     50                  55                  60
Val Ser Glu Glu Gln Val Leu Ala Met Phe Ala Lys Asp Lys Ala Ser
 65                  70                  75                  80
Ala Glu Leu Leu Phe Val Pro His Val Leu Met Arg Val Arg Phe Ser
                 85                  90                  95
Gly Glu Glu Asp Lys Arg Ala Gly Ser His Glu Gly Ala Met Leu Trp
            100                 105                 110
Ser Leu Ser Asn Gly Glu Met Val Leu Asn Thr Gly Ser Trp Thr Tyr
        115                 120                 125
Ser Lys Gly Phe Arg Glu Cys Leu Met Leu Lys Ala Gly Lys Gln Asp
    130                 135                 140
Val Gln Leu Met Gln Val Leu Ala Gly Met Gly Gly Ser Ala Ser Arg
145                 150                 155                 160
Glu Val Leu Ser Gln Ala Leu Ser Met Arg Asn Val Arg Ala Asp Arg
                165                 170                 175
Val Ile Arg Ala Cys Gln Lys Lys Lys Leu Ile Phe Thr His Asp Asn
            180                 185                 190
Leu Ile Tyr Ser His Phe Gln Gln Pro Gln Pro Ile Lys Gly Cys Met
        195                 200                 205
Thr Val Phe Asn Ser Ser Pro Val Trp Leu Ala Lys Pro Lys Gly Ser
    210                 215                 220
Thr Val Cys Ser Val Val Tyr Pro Glu Asp Arg Ile Gln Asn Leu Val
225                 230                 235                 240
Glu Met Ile Phe Gly Asp Asn Phe Phe Ile Leu Ser Ser Glu Gln Ile
                245                 250                 255
His Val Pro Val Tyr Lys Val Ser Ile Ala Ala Ser Asp Ser Ser Val
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            260                 265                 270
Arg Val Glu Tyr Ile Asn Ala Ile Thr Gly Lys Pro Phe Asp Phe Ala
        275                 280                 285
Pro Thr Tyr Cys Lys
    290
<210>918
<211>1240
<212>PRT
<213>Chlamydia trachomatis
<400>918
Arg Ala Val Leu Thr Trp Ile Pro Leu His Cys His Ser Gln Tyr Ser
  1               5                  10                  15
Ile Leu Asp Ala Thr Cys Ser Ile Lys Lys Phe Val Ala Lys Ala Val
             20                  25                  30
Glu Tyr Gln Ile Pro Ala Leu Ala Leu Thr Asp His Gly Asn Leu Phe
         35                  40                  45
Gly Ala Val Glu Phe Tyr Lys Thr Cys Lys Gln Asn Ala Ile Lys Pro
     50                  55                  60
Ile Ile Gly Cys Glu Leu Tyr Val Ala Pro Ser Ser Arg Phe Asp Lys
 65                  70                  75                  80
Lys Lys Glu Arg Lys Ser Arg Val Ala Asn His Leu Ile Leu Leu Cys
                 85                  90                  95
Lys Asp Glu Glu Gly Tyr Arg Asn Leu Cys Leu Leu Ser Ser Leu Ala
            100                 105                 110
Tyr Thr Glu Gly Phe Tyr Tyr Val Pro Arg Ile Asp Arg Asp Leu Leu
        115                 120                 125
Ser Gln His Ser Lys Gly Leu Ile Cys Leu Ser Ala Cys Leu Ser Gly
    130                 135                 140
Ser Val Ala Gln Ala Ala Leu Glu Ser Glu Glu Asp Leu Glu Lys Asp
145                 150                 155                 160
Leu Leu Trp Tyr Gln Asp Leu Phe Gln Glu Asp Phe Phe Ser Glu Val
                165                 170                 175
Gln Leu His Lys Ser Ser Glu Glu Lys Val Ala Leu Phe Glu Glu Ala
            180                 185                 190
Trp Leu Lys Gln Asn Tyr Tyr Gln Phe Ile Glu Lys Gln Leu Lys Val
        195                 200                 205
Asn Glu Ala Val Leu Ala Thr Ser Lys Arg Leu Gly Ile Pro Ser Val
    210                 215                 220
Ala Thr Asn Asp Ile His Tyr Leu Asn Pro Asp Asp Trp Leu Ala His
225                 230                 235                 240
Glu Val Leu Leu Asn Val Gln Ser Arg Glu Pro Ile Arg Thr Ala Lys
                245                 250                 255
Gln Asn Thr Tyr Ile Pro Asn Pro Lys Arg Lys Thr Tyr Pro Ser Arg
            260                 265                 270
Glu Phe Tyr Phe Lys Ser Pro Gln Glu Met Ala Glu Leu Phe Ala Ala
        275                 280                 285
His Pro Glu Thr Ile Thr Asn Thr Cys Ile Val Ala Glu Arg Cys His
    290                 295                 300
Leu Glu Leu Asp Phe Glu Thr Lys His Tyr Pro Ile Tyr Val Pro Glu
305                 310                 315                 320
Ala Leu Gln Lys Lys Gly Ser Tyr Thr Glu Glu Glu Arg Tyr Lys Ala
                325                 330                 335
Ser Ser Ala Phe Leu Glu Glu Leu Cys Glu Gln Gly Leu Thr Ser Lys
            340                 345                 350
Tyr Thr Pro Glu Leu Leu Gly His Ile Ala Lys Lys Phe Pro Gly Glu
        355                 360                 365
Asp Pro Leu Thr Leu Val Lys Glu Arg Leu Lys Leu Glu Ser Ser Ile
    370                 375                 380
Ile Ile Ser Lys Gly Met Cys Asp Tyr Leu Leu Ile Val Trp Asp Ile
385                 390                 395                 400
Ile Asn Trp Ala Lys Asp His Gly Ile Pro Val Gly Pro Gly Arg Gly
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Sequence Listing

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                405                 410                 415
Ser Gly Ala Gly Ser Val Met Leu Phe Leu Leu Gly Ile Thr Glu Ile
            420                 425                 430
Glu Pro Ile Arg Phe Asp Leu Phe Phe Glu Arg Phe Ile Asn Pro Glu
        435                 440                 445
Arg Ile Ser Tyr Pro Asp Ile Asp Ile Asp Ile Cys Met Ile Gly Arg
    450                 455                 460
Glu Arg Val Ile Asn Tyr Ala Ile Glu Arg His Gly Lys Asp Asn Val
465                 470                 475                 480
Ala Gln Ile Ile Thr Phe Gly Thr Met Lys Ala Lys Met Xaa Ile Lys
                485                 490                 495
Asp Val Gly Arg Thr Leu Asp Thr Pro Leu Ala Lys Val Asn Phe Ile
            500                 505                 510
Ala Lys His Ile Pro Asp Leu Asn Ala Thr Ile Thr Ser Ala Leu Glu
        515                 520                 525
Ala Asp Pro Glu Leu Lys Gln Leu Tyr Val Asp Asp Ala Glu Ala Ala
    530                 535                 540
Glu Val Ile Asp Met Ala Lys Lys Leu Glu Gly Ser Ile Arg Asn Thr
545                 550                 555                 560
Gly Val His Ala Ala Gly Val Ile Ile Cys Gly Asp Pro Leu Thr Asn
                565                 570                 575
His Ile Pro Ile Cys Val Pro Lys Asp Ser Ser Met Ile Ser Thr Gln
            580                 585                 590
Tyr Ser Met Lys Pro Val Glu Ser Val Gly Met Leu Lys Val Asp Phe
        595                 600                 605
Leu Gly Leu Lys Thr Leu Thr Gly Ile His Ile Ala Thr Gln Ala Ile
    610                 615                 620
Tyr Lys Lys Thr Gly Ile Leu Leu Arg Ala Ala Thr Ile Pro Leu Asp
625                 630                 635                 640
Asp Gln Asn Thr Phe Ser Leu Leu His Gln Gly Lys Thr Met Gly Ile
                645                 650                 655
Phe Gln Met Glu Ser Arg Gly Met Gln Asp Leu Ala Lys Asn Leu Arg
            660                 665                 670
Pro Asp Ala Phe Glu Glu Ile Ile Ala Ile Gly Ala Leu Tyr Arg Pro
        675                 680                 685
Gly Pro Met Asp Met Ile Pro Ser Phe Ile Asn Arg Lys His Gly Lys
    690                 695                 700
Glu Asn Ile Glu Xaa Asp His Pro Leu Met Glu Pro Ile Leu Lys Glu
705                 710                 715                 720
Thr Phe Gly Ile Met Val Tyr Gln Glu Gln Val Met Gln Ile Ala Gly
                725                 730                 735
Ser Leu Ala Lys Tyr Ser Leu Gly Glu Gly Asp Val Leu Arg Arg Ala
            740                 745                 750
Met Gly Lys Lys Asp His Glu Gln Met Val Lys Glu Arg Glu Lys Phe
        755                 760                 765
Cys Ser Arg Ala Ala Ala Asn Gly Ile Asp Pro Ser Ile Ala Thr Thr
    770                 775                 780
Ile Phe Asp Lys Met Glu Lys Phe Ala Ser Tyr Gly Phe Asn Lys Ser
785                 790                 795                 800
His Ala Ala Ala Tyr Gly Leu Ile Thr Tyr Thr Thr Ala Tyr Leu Lys
                805                 810                 815
Ala Asn Tyr Pro Lys Glu Trp Leu Ala Ala Leu Leu Thr Cys Asp Tyr
            820                 825                 830
Asp Asp Ile Glu Lys Val Gly Lys Leu Ile Gln Glu Ala His Ser Met
        835                 840                 845
Asn Ile Leu Val Leu Pro Pro Asp Ile Asn Glu Ser Gly Gln Asp Phe
    850                 855                 860
Glu Ala Thr Gln Glu Gly Ile Arg Phe Ser Leu Gly Ala Val Lys Gly
865                 870                 875                 880
Val Gly Met Ser Ile Val Asp Ser Ile Val Glu Glu Arg Glu Lys Asn
                885                 890                 895
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Gly Pro Tyr Lys Ser Leu Gln Asp Phe Val Gln Arg Ala Asp Phe Lys
            900                 905                 910
Lys Val Thr Lys Lys Gln Leu Glu Asn Leu Val Asp Ala Gly Thr Phe
        915                 920                 925
Asp Cys Phe Glu Pro Asn Lys Asp Leu Ala Leu Ala Ile Leu Asn Asp
    930                 935                 940
Leu Tyr Asp Thr Phe Phe Arg Glu Lys Lys Glu Ala Ala Thr Gly Val
945                 950                 955                 960
Leu Thr Phe Phe Ser Leu Asp Ser Met Xaa Arg Asp Pro Val Lys Ile
                965                 970                 975
Thr Val Xaa Pro Glu Asn Val Ile Gln Arg Ser Pro Lys Glu Leu Leu
            980                 985                 990
Lys Arg Glu Lys Glu Leu Leu Gly Val Tyr Leu Thr Ala His Pro Met
        995                 1000                1005
Asp Ala Val Glu His Met Leu Pro Phe Leu Ser Val Val Pro Ala Arg
    1010                1015                1020
Asp Phe Glu Gly Leu Pro His Gly Thr Ile Ile Arg Thr Val Phe Leu
1025                1030                1035                1040
Ile Asp Lys Val Thr Thr Lys Ile Ser Ser Ala Glu Gln Lys Lys Phe
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Ala Leu Leu Gln Val Ser Asp Glu Val Asp Ser Tyr Glu Leu Pro Ile
            1060                1065                1070
Trp Ala Asp Met Tyr Ala Glu Tyr His Asp Leu Leu Glu Glu Asp Arg
        1075                1080                1085
Leu Ile Tyr Ala Ile Leu Ala Ile Asp Arg Arg Ser Asp Ser Leu Arg
    1090                1095                1100
Leu Ser Cys Arg Trp Met Arg Asp Leu Ser Thr Val Asn Asp Ser Val
1105                1110                1115                1120
Ile Ala Glu Cys Asp Glu Val Tyr Asp Arg Leu Lys Ser Gln Lys Val
                1125                1130                1135
Tyr Ser Ser Thr Lys Lys Ser Thr Gly Ala Gln Ser Ser Ala Met Ile
            1140                1145                1150
Lys Lys Val Glu Thr Arg Glu Ile Ser Pro Val Thr Ile Ser Leu Asp
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Leu Asn Lys Leu Arg His Ser His Leu Phe Ile Leu Lys Gly Leu Ile
    1170                1175                1180
Arg Lys Tyr Ser Gly Ser Gln Ala Leu Ser Leu Val Phe Thr Lys Asp
1185                1190                1195                1200
Asn Gln Arg Phe Ala Ser Ile Ser Pro Asp Ala Asp Phe Phe Val Thr
                1205                1210                1215
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             20                  25                  30
Ser Thr Leu Tyr Ile Thr Tyr Gly Ile Ser Lys Phe Val Ser Gly Val
         35                  40                  45
Met Ser Asp Gln Ser Asn Pro Arg Tyr Phe Met Ala Ile Gly Leu Ile
     50                  55                  60
Ile Thr Gly Ile Ser Asn Ile Phe Phe Gly Leu Ser Ser Thr Ile Pro
 65                  70                  75                  80
Leu Phe Val Leu Phe Trp Gly Ile Asn Gly Trp Phe Gln Gly Trp Gly
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Arg Gly Thr Trp Trp Ser Val Trp Ser Thr Ser His Asn Ile Gly Gly
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Ala Leu Ile Pro Val Leu Thr Gly Val Ala Ile Asp Tyr Thr Gly Trp
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Arg Gly Val Met Phe Ile Pro Gly Ile Ile Cys Ile Ile Met Gly Phe
145                 150                 155                 160
Ile Leu Ile Asp Arg Leu Arg Asp Thr Pro Gln Ser Leu Gly Leu Pro
                165                 170                 175
Ala Ile Glu Lys Phe Arg Lys Glu Glu Asp Ala His Pro His Glu Glu
            180                 185                 190
Thr Thr Ala Asp Ile Leu Glu Glu Glu Ala Glu Arg Glu Leu Ser Thr
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Lys Glu Ile Leu Phe Thr Tyr Val Leu Ser Asn Lys Trp Leu Trp Phe
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Leu Ser Phe Ala Ser Phe Phe Ile Tyr Val Val Arg Met Ala Val Asn
225                 230                 235                 240
Asp Trp Ser Ala Leu Tyr Leu Ile Glu Thr Lys Asp Tyr Ser Thr Val
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Lys Ala Asn Leu Cys Val Ser Leu Phe Glu Ile Gly Gly Leu Phe Gly
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Met Leu Leu Ala Gly Trp Leu Ser Asp Thr Ile Ser Lys Gly Lys Arg
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    290                 295                 300
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305                 310                 315                 320
Phe Leu Phe Ile Ile Gly Phe Phe Leu Phe Gly Pro Gln Met Met Ile
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Gly Leu Ala Ala Ala Glu Leu Ser His Lys Lys Ala Ala Gly Thr Ala
            340                 345                 350
Ser Gly Phe Thr Gly Trp Phe Ala Tyr Phe Gly Ala Ala Phe Ala Gly
        355                 360                 365
Tyr Pro Leu Gly Lys Val Ala Gln Asp Trp Gly Trp His Gly Phe Phe
    370                 375                 380
Val Ala Leu Leu Ala Cys Ala Leu Ile Ala Leu Ile Leu Phe Leu Pro
385                 390                 395                 400
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Lys Thr Glu Thr Phe Leu Arg Val Gly Glu His Ser Asp Ile Val Lys
         35                  40                  45
Lys Glu Val Tyr Thr Xaa Leu Asp Lys Lys Gly Arg Ser Leu Thr Leu
     50                  55                  60
Arg Pro Glu Gly Thr Ala Ala Val Val Arg Ala Leu Leu Asp His Ser
 65                  70                  75                  80
Ala Asp Met Arg Lys Asp Asn Lys Phe Tyr Tyr Ile Leu Pro Met Phe
                 85                  90                  95
Arg Tyr Glu Arg Xaa Gln Ser Gly Arg Tyr Arg Gln His His Gln Phe
            100                 105                 110
Gly Leu Glu Ala Ile Gly Val Arg His Pro Leu Arg Asp Ala Glu Val
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Leu Ser Leu Leu Trp Asp Phe Tyr Ala Ala Val Gly Leu Gln His Met
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Gln Ile His Val Asn Phe Leu Gly Gly Gln Lys Thr Arg Ala Arg Tyr
145 150 155 160
Asp Glu Ala Leu Arg Glu Phe Phe Arg Lys Asp Leu Asp Arg Leu Ser
165 170 175
Pro Leu Ser Gln Glu Arg Tyr His Ala Asn Leu Leu Arg Ile Leu Asp
180 185 190
Ser Lys Glu Pro Glu Asp Gln Glu Phe Ile Glu Lys Ala Pro Ser Ile
195 200 205
Leu Asp Tyr Ile Asp Asp Arg Asp Leu Ser Tyr Phe Asp Ala Val Leu
210 215 220
Ala Gln Leu Lys Ala Leu Gly Ile Pro Phe Ala Ile Asn Pro Arg Leu
225 230 235 240
Val Arg Gly Leu Asp Tyr Tyr Thr Asp Leu Val Phe Glu Ala Val Thr
245 250 255
Val Val Gly Glu Arg Ser Tyr Ala Leu Gly Gly Gly Gly Arg Tyr Asp
260 265 270
Glu Leu Val Ala Gln Ser Gly Gly Pro Ser Met Pro Ala Phe Gly Phe
275 280 285
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290 295 300
Ser Leu Ser Thr Ser Thr Arg Arg Leu Arg Leu Ile Pro Met Asp Glu
305 310 315 320
Gln Ala Asp Ala Phe Cys Phe Ser Trp Ala Asn Arg Leu Arg Asn Leu
325 330 335
Gly Ile Ala Thr Glu Val Asp Trp Ser His Lys Lys Pro Lys Leu Ser
340 345 350
Leu Lys Asp Ala Ala Asp Gln Gln Val Ser Phe Val Cys Leu Leu Gly
355 360 365
Glu Gln Glu Leu Ala Thr Lys Gln Phe Ile Val Lys Asp Met Ser Leu
370 375 380
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35 40 45
Val Glu Val Asp Lys Glu Phe Pro Cys Ser Asn Ser Val Trp Ile Thr
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Met Lys Tyr Arg Thr His Lys Cys Asn Glu Leu Ser Leu Asp His Val
1 5 10 15
Gly Glu His Val Arg Leu Ser Gly Trp Val His Arg Tyr Arg Asn His

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Gly Gly Val Val Phe Ile Asp Leu Arg Asp Arg Phe Gly Ile Thr Gln
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Gln Val Arg Ser Glu Trp Val Leu Cys Val Glu Gly Leu Val Cys Ala
65                  70                  75                  80
Arg Leu Glu Gly Met Glu Asn Pro Asn Leu Val Thr Gly Ser Ile Glu
                85                  90                  95
Val Glu Val Ser Ser Leu Glu Val Leu Ser Arg Ala Gln Asn Leu Pro
            100                 105                 110
Phe Ser Ile Ser Asp Glu His Ile Asn Val Asn Glu Glu Leu Arg Leu
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Thr Tyr Arg Tyr Leu Asp Met Arg Arg Gly Asp Ile Leu Asp Arg Leu
    130                 135                 140
Met Cys Arg His Lys Val Met Leu Ala Cys Arg Gln Tyr Leu Asp Glu
145                 150                 155                 160
Gln Gly Phe Thr Glu Val Val Thr Pro Ile Leu Gly Lys Ser Thr Pro
                165                 170                 175
Glu Gly Ala Arg Asp Tyr Leu Val Pro Ser Arg Ile Tyr Pro Gly Asn
            180                 185                 190
Phe Tyr Ala Leu Pro Gln Ser Pro Gln Leu Phe Lys Gln Ile Leu Met
        195                 200                 205
Val Gly Gly Leu Asp Arg Tyr Phe Gln Ile Ala Thr Cys Phe Arg Asp
    210                 215                 220
Glu Asp Leu Arg Ala Asp Arg Gln Pro Glu Phe Thr Gln Ile Asp Met
225                 230                 235                 240
Glu Met Ser Phe Gly Gly Pro Glu Asp Leu Phe Pro Val Val Glu Glu
                245                 250                 255
Leu Val Thr Arg Leu Phe Ala Val Lys Gly Ile Glu Leu Lys Ala Pro
            260                 265                 270
Phe Leu Arg Met Thr Tyr Gln Glu Ala Lys Asp Ser Tyr Gly Thr Asp
        275                 280                 285
Lys Pro Asp Leu Arg Phe Ala Leu Arg Leu Lys Asn Cys Cys Glu Tyr
    290                 295                 300
Ala Arg Lys Phe Thr Phe Ser Ile Phe Leu Asp Gln Leu Ala His Gly
305                 310                 315                 320
Gly Thr Val Lys Gly Phe Cys Val Pro Gly Gly Ala Asp Met Ser Arg
                325                 330                 335
Lys Gln Leu Asp Ile Tyr Thr Asp Phe Val Lys Arg Tyr Gly Ser Met
            340                 345                 350
Gly Leu Val Trp Ile Lys Lys Gln Asp Gly Gly Val Ser Ser Asn Val
        355                 360                 365
Ala Lys Phe Ala Ser Glu Asp Val Phe Gln Glu Met Phe Glu Ala Phe
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Glu  Ala  Lys  Asp  Gln  Asp  Ile  Leu  Leu  Leu  Ile  Ala  Ala  Pro  Glu  Ala
390                 395                 400
Val Ala Asn Gln Ala Leu Asp His Leu Arg Arg Leu Ile Ala Lys Glu
                405                 410                 415
Arg Gln Leu Tyr Asp Ser Thr Gln Tyr Asn Phe Val Trp Ile Thr Asp
            420                 425                 430
Phe Pro Leu Phe Ala Lys Glu Glu Gly Glu Leu Cys Pro Glu His His
        435                 440                 445
Pro Phe Thr Ala Pro Leu Asp Glu Asp Ile Ser Leu Leu Asp Ser Asp
    450                 455                 460
Pro Phe Ala Val Arg Ser Ser Ser Tyr Asp Leu Val Leu Asn Gly Tyr
465                 470                 475                 480
Glu Ile Ala Ser Gly Ser Gln Arg Ile His Asn Pro Asp Leu Gln Asn
                485                 490                 495
Lys Ile Phe Ala Leu Leu Lys Leu Ser Gln Glu Ser Val Lys Glu Lys
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Phe Gly Phe Phe Ile Asp Ala Leu Ser Phe Gly Thr Pro Pro His Leu
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Glu Thr Ile Arg Glu Val Ile Ala Phe Pro Lys Thr Gln Lys Ala Gly
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Glu Leu Gly Leu Lys Leu
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35 40 45
Thr Asp Asn Gln Lys Leu Ser Arg Thr Phe Gly His Leu Leu Ala Arg
50 55 60
Gln Leu Ser Arg Thr Glu Asp Phe Ser Leu Asp Leu Val Glu Val Ile
65 70 75 80
Lys Gly Met Gln Ser Glu Ile Asp Gly Gln Ser Ala Pro Leu Thr Asp
85 90 95
Thr Glu Tyr Glu Lys Gln Met Ala Glu Val Gln Lys Ala Ser Phe Glu
100 105 110
Ala Lys Cys Ser Glu Asn Leu Ala Ser Ala Glu Glu Phe Leu Lys Glu
115 120 125
Asn Lys Glu Lys Ala Gly Val Ile Glu Leu Glu Pro Asn Lys Leu Gln
130 135 140
Tyr Arg Val Val Lys Glu Gly Thr Gly Arg Ala Leu Ser Gly Lys Pro
145 150 155 160
Thr Ala Leu Leu His Tyr Thr Gly Ser Phe Ile Asp Gly Lys Asp Phe
165 170 175
Asp Ser Ser Glu Lys Asn Lys Ala Ala Ile Leu Leu Pro Leu Thr Lys
180 185 190
Val Ile Pro Gly Phe Ser Gln Gly Met Gln Gly Met Lys Glu Gly Glu
195 200 205
Val Arg Val Leu Tyr Ile His Pro Asp Leu Ala Tyr Gly Thr Ala Gly
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Gln Leu Pro Pro Asn Ser Leu Leu Ile Phe Glu Val Xaa Leu Ile Glu
225 230 235 240
Ala Asn Asp Asp Asn Val Ser Val Thr Glu
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20 25 30
Pro Leu Gly Phe Ser Leu Ala Asp Lys Phe Val Lys Arg Ala Gly Met
35 40 45
Asp Tyr Trp Glu Arg Leu Ser Leu Ser Val Val Asp Ser Leu Glu Glu
50 55 60
Ala Leu Leu Gly Val Pro Lys Glu Arg Ile Phe Cys Leu Thr Thr Lys

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65 70 75 80
Gly Ser Ser Tyr Tyr Gly Glu Arg Glu Leu Pro Leu Asp Gly Thr Tyr
85 90 95
Ile Phe Gly Ala Glu Ser Lys Gly Leu Ser Gln Thr Val Leu Asp Ala
100 105 110
Tyr Ser Ser Gln Cys Leu Tyr Ile Pro Met Ile Glu Gly Thr Arg Ser
115 120 125
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Gln Asn Tyr Lys Thr Leu Phe
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35 40 45
Thr Ile Leu Lys Val Asp Ile Asp Ser Ser Pro Arg Pro Ala Glu Gln
50 55 60
Tyr Ser Val Ser Ser Ile Pro Thr Leu Ile Leu Phe Lys Asp Gly Lys
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Leu Ile Ser Lys His Gln
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Gln Leu Leu Glu Ala Asp Lys Lys Ile Trp Arg Glu Thr Glu Ile Gln
35 40 45
Ile Ser Ser Gly Lys Pro Glu Val Asn Glu Gln Thr Lys Arg Ile Tyr
50 55 60
Ile Cys Pro Phe Thr Gly Lys Val Phe Ala Asp Asn Val Tyr Ala Asn
65 70 75 80
Pro Gln Asp Ala Ile Tyr Asp Trp Leu Ser Ser Cys Pro Gln Asn Arg
85 90 95
Glu Arg Gln Ser Gly Val Ala Val Lys Arg Phe Leu Val Ser Asp Asp
100 105 110
Pro Glu Val Ile Arg Ala Tyr Ile Val Pro Pro Lys Glu Pro Ile Ile
115 120 125
Lys Thr Val Tyr Ala Ser Ala Val Thr Gly Lys Leu Phe His Ser Leu
130 135 140
Pro Thr Leu Leu Glu Asp Phe Lys Thr Ser Tyr Leu Arg Pro Met Thr
145 150 155 160
Leu Glu Glu Val Gln Asn Gln Asn Lys Phe Gln Leu Glu Ser Ser Phe
165 170 175
Leu Thr Leu Leu Gln Asn Ala Leu Glu Glu Glu Lys Ile Ala Glu Phe
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Val Glu Ser Leu Ala Asp Asp Thr Ala Phe His Lys Tyr Ile Ser Gln
195 200 205

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Trp Val Asp Thr Glu Glu
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35 40 45
Ile Val Gln Gly Phe Leu Gly Glu Ala Ala Val Asp Gln Val Ala Ser
50 55 60
Pro Ser Phe Ala Leu Leu His Val Tyr Glu Ala Gly Gly Arg Arg Val
65 70 75 80
Cys His Tyr Asp Leu Tyr Arg Leu Glu Thr Met Asp Ile Arg Asn Gly
85 90 95
Ala Asp Leu Phe Gln Asp Ala Glu Glu Glu Asp Leu Ile Cys Val Glu
100 105 110
Trp Pro Glu Ala Val Asn Leu Leu Pro Gln Phe Arg Lys Ser Val Cys
115 120 125
Val Gln Met Arg Ser Leu Thr Asp Ala Gln Arg Glu Val Ser Ile Gly
130 135 140
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20 25 30
Ile Arg Phe Thr Phe Asp Glu Ile Ile Asp Ser Val Glu Phe Leu Ile
35 40 45
His Pro Glu Arg Ala Val Ser Ala Glu Ser Gln Lys Ile His Lys Ile
50 55 60
Ser Asp Ala Met Leu Arg Asp Lys Pro Lys Phe Gly Glu Val Phe Ser
65 70 75 80
Arg Ile Lys Gly Phe Phe Lys Glu Arg Asp His Ile Val Gly His His
85 90 95
Val Gly Phe Asp Leu Gln Val Leu Ser Gln Glu Ser Glu Arg Leu Gly
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115 120 125
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20 25 30
Val Glu Met Asn Val Lys Val Phe Lys His Leu Thr Lys Arg Phe Arg
35 40 45

Thr Leu Ser Gln Val Thr His Ile Leu Ser Lys Pro Ile Lys Met Lys
50 55 60
Tyr Met Pro Leu Gly Lys Tyr Lys Gly Trp Leu Phe Thr Asp Ile Pro
65 70 75 80
Leu Glu Tyr Leu Leu Trp Ala Ser Lys Met Asp Phe Asp Gln Asp Leu
85 90 95
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35 40 45
Asp Arg Leu Ala Leu Val Val Ala Glu Arg His Cys Glu Ser Ile Cys
50 55 60
Val Thr Ala Phe Val Asp Ala Met Arg Phe Tyr Ala Pro Ala Tyr Met
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Gly Glu Asn Leu Ile Cys Cys Ala Ser Val Asn Arg Ser Trp Arg Thr
85 90 95
Ser Leu Glu Val Gly Val Lys Val Trp Ala Glu Asn Ile Tyr Lys Gln
100 105 110
Glu His Arg His Ile Thr Ser Ala Tyr Phe Thr Phe Val Ala Val Asp
115 120 125
Lys Asn Asn Ser Pro Val Glu Val Pro Glu Leu Ile Pro Glu Ser Gln
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20 25 30
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35 40 45
Leu Phe Ala Leu Val Glu Gln Leu Ser Trp Lys Lys Val Trp Cys Ile
50 55 60
Ala Phe Ile Trp Thr Trp Thr Val Glu Gly Ala His Phe Ser Trp Met
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Leu Leu Ser Tyr Leu Ala Thr Leu Phe Ala Ser Phe Ser Cys
100 105 110

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20 25 30
Ser Gly Val Ser Phe Asp Phe Ile Gly Trp Pro Leu Thr Ala Thr Ala
35 40 45
Tyr Gly Arg Gln Phe Gly Ser Phe Phe Gly Trp Ala Gly Gln Ser Phe
50 55 60
Leu Val Ile Ala Ala Asn Ile Cys Cys Phe Ala Ala Cys Leu Leu Lys
65 70 75 80
His Ser Phe Ser Lys Gly Leu Trp Leu Thr Leu Cys Ala Phe Pro Tyr
85 90 95
Leu Leu Gly Gly Ala His Tyr Glu Tyr Leu Lys Lys His Phe Ser Asp
100 105 110
Ser Glu Val Leu Arg Val Ala Ile Val Gln Pro Gly Tyr Ser Pro His
115 120 125
Met His Ala Gly Arg Met Ala Ser Ala Ile Trp Arg Gly Leu Val Ser
130 135 140
Leu Cys Gln Thr Ile Gln Thr Pro Val Asp Val Ile Val Phe Pro Glu
145 150 155 160
Val Ser Val Pro Phe Gly Leu His Arg Gln Ala Tyr Thr Leu His Glu
165 170 175
Asn Gln Pro Val Leu Glu Ser Leu Leu Pro Asn Lys Ser Trp Gly Glu
180 185 190
Phe Phe Thr Asn Leu Asp Trp Ile Gln Ala Ile Ala Glu Arg Tyr Gln
195 200 205
Cys Thr Val Ile Met Gly Met Glu Arg Trp Glu Asn Lys Gly Gly Ile
210 215 220
Leu His Leu Tyr Asn Ala Ala Glu Cys Val Ser Arg Glu Gly Glu Ile
225 230 235 240
Thr Ser Tyr Asp Lys Arg Ile Leu Val Pro Gly Gly Glu Tyr Ile Pro
245 250 255
Gly Gly Lys Ile Gly Phe Ser Leu Cys Gln Thr Phe Phe Pro Glu Phe
260 265 270
Ala Leu Pro Phe Gln Arg Leu Pro Gly Glu Phe Ser Gly Val Val Asn
275 280 285
Ile Thr Glu Arg Ile Lys Ala Gly Ile Ser Ile Cys Tyr Glu Glu Thr
290 295 300
Phe Gly Tyr Ala Ile Arg Pro Tyr Lys Arg Gln Gln Ala Asp Ile Leu
305 310 315 320
Val Asn Leu Thr Asn Asp Gly Trp Tyr Pro Arg Ser Arg Leu Pro Leu
325 330 335
Val His Phe Tyr His Gly Met Leu Arg Asn Gln Glu Leu Gly Ile Pro
340 345 350
Cys Ile Arg Ala Cys His Thr Gly Val Ser Ala Ala Val Asp Ser Leu
355 360 365
Gly Arg Ile Val Gly Ile Leu Pro Trp Glu Ser Arg Thr Cys Pro Val
370 375 380
Ser Thr Gly Val Leu Gln Val Ser Val Pro Leu Tyr Ser Tyr His Thr
385 390 395 400
Val Tyr Ala Arg Leu Gly Asp Ala Pro Leu Leu Leu Ile Ala Val Cys
405 410 415
Ser Val Ile Gly Ala Ile Ala Tyr Phe Tyr Arg Lys Lys Lys Glu Thr
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Pro Pro Gln Thr Phe Phe
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Tyr Xaa Arg Ala Arg Arg Gly Lys Tyr Arg Arg Ile Phe Ser Arg His
20 25 30
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35 40 45
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50 55 60
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20 25 30
Phe Met Asp Leu Ile Asp Gln Ala Gly Ile Gln Glu Gln Glu Gln Thr
35 40 45
Val Gln Ile Ala Arg Leu Ala His Pro Val Tyr Tyr Gln Tyr Gln Asp
50 55 60
Thr Ile Leu Ala Ala Phe Pro Ser Asp Glu Phe Lys Ile Ser Tyr Thr
65 70 75 80
Leu His Tyr Ser His Asn Ser Thr Ile Gly Thr Gln Tyr Arg Ser Leu
85 90 95
Val Ile Ser Glu Glu Ser Phe Arg Lys Glu Ile Ala Pro Cys Arg Thr
100 105 110
Phe Ala Leu Tyr Ser Glu Leu Cys Phe Leu Met Glu Lys Gly Leu Ile
115 120 125
Gly Gly Gly Cys Val Gly Asn Ala Val Leu Ser Lys Xaa Asp Gly Val
130 135 140
Ile Ser Leu Gly Lys Leu Arg Phe Pro Asp Glu Pro Val Arg His Lys
145 150 155 160
Ile Leu Asp Leu Ile Gly Asp Leu Ser Leu Val Gly Thr Pro Phe Leu
165 170 175
Ala His Val Ile Ala Val Gly Ser Gly His Ser Ser Asn Ile Ala Leu
180 185 190
Gly Asn Arg Ile Leu Glu Ala Leu Gln His Glu Gln Glu Leu Val Lys
195 200 205

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20 25 30
Ile Leu Ser Tyr Asp Leu Asn Thr Arg Ser Val Val Ala Gln Lys Asn
35 40 45
Val Thr Ile Asn Glu Pro Phe Phe Ala Gly His Phe Pro Gly Ala Pro
50 55 60
Ile Met Pro Gly Val Leu Ile Leu Glu Ala Leu Ala Gln Ala Ala Gly
65 70 75 80
Val Leu Leu Gly Ile Ile Leu Glu Asn Asp Arg Asp Lys Lys Ile Ala
85 90 95
Leu Phe Leu Gly Ile Gln Lys Ala Lys Phe Arg Gln Pro Val Lys Pro
100 105 110
Gly Asp Val Leu Thr Leu Lys Ala Glu Phe Ser Leu Ile Ser Ala Lys

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        115                 120                 125
Gly Gly Lys Ala Phe Ala Gln Ala Phe Val Gly Ser Gln Val Val Ala
    130                 135                 140
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<213>Chlamydia trachomatis
<400>936
Met Thr Asn Ile His Pro Thr Ala Ile Val Glu Asp Gly Ala Arg Ile
  1               5                  10                  15
Gly Asn Asn Val Thr Ile Glu Pro Tyr Ala Ile Val Lys Lys Ser Val
             20                  25                  30
Thr Leu Trp Asn Asp Val Val Val Lys Ser Tyr Ala Tyr Ile Asp Gly
         35                  40                  45
Phe Thr Thr Ile Gly Arg Xaa Thr Thr Val Trp Pro Ser Ala Met Ile
     50                  55                  60
Gly Asn Lys Pro Gln Asp Leu Lys Phe Lys Gly Glu Lys Thr Phe Val
 65                  70                  75                  80
Glu Ile Gly Glu His Cys Glu Ile Arg Glu Phe Ala Met Ile Thr Ser
                 85                  90                  95
Ser Thr Phe Glu Gly Thr Thr Val Ser Ile Gly Asn Asn Cys Leu Ile
            100                 105                 110
Met Pro Trp Ala His Ile Ala His Asn Cys Ser Val Gly Asn Asn Val
        115                 120                 125
Val Phe Ser Thr His Val Gln Leu Ala Gly His Val Gln Val Gly Asp
    130                 135                 140
Cys Val Thr Ile Gly Ser Met Val Gly Val His Gln Phe Val Arg Ile
145                 150                 155                 160
Gly Ser Tyr Ser Met Val Gly Ala Met Ser Gly Ile Arg Arg Asp Ile
                165                 170                 175
Pro Pro Phe Thr Ile Gly Thr Gly Asn Pro Tyr Ala Leu Gly Gly Ile
            180                 185                 190
Asn Lys Val Gly Leu Gln Arg Arg Gln Val Ser Phe Glu Thr Arg Leu
        195                 200                 205
Ala Leu Ile Lys Thr Phe Lys Arg Val Phe Arg Ser Asp Glu Ser Phe
    210                 215                 220
Gln Ala Ser Leu Glu Ser Val Leu Glu Asp Phe Gly Glu Val Pro Glu
225                 230                 235                 240
Val Arg His Phe Val Glu Phe Cys Arg Gln Pro Ser Lys Arg Gly Ile
                245                 250                 255
Glu Arg Gly Val Asp Cys Glu Asp Leu
            260                 265
<210>937
<211>207
<212>PRT
<213>Chlamydia trachomatis
<400>937
Leu Ser Leu Ser Leu Arg Val Val Tyr Leu Gly Thr Pro Gln Phe Ala
  1               5                  10                  15
Ala Thr Val Leu Lys Thr Leu Leu Asp Ala His Thr His Ile Val Gly
             20                  25                  30
Val Val Thr Arg Ala Asp Lys Pro Gln Lys Arg Ser Ser Lys Leu Ile
         35                  40                  45
Ser Ser Pro Val Lys Gln Leu Ala Leu Ser Lys Asn Ile Pro Leu Leu
     50                  55                  60
Gln Pro Ile Lys Thr Thr Asp Pro Ala Phe Leu Ala Gln Leu Arg Glu
 65                  70                  75                  80
Trp Gln Ala Asp Val Phe Ile Val Val Ala Tyr Gly Val Ile Leu Lys
                 85                  90                  95
```

```
Gln Glu Leu Leu Asp Ile Pro Thr Tyr Gly Cys Tyr Asn Leu His Ala
            100                 105                 110
Gly Leu Leu Pro Ala Tyr Arg Gly Ala Ala Pro Ile Gln Arg Cys Ile
        115                 120                 125
Met Asp Gly Gly Val Leu Ser Gly Asn Thr Val Ile Arg Met Asp Ala
    130                 135                 140
Gly Met Asp Thr Gly Asp Ile Ala Asn Val Asn Tyr Val Ala Ile Gly
145                 150                 155                 160
Glu Asp Met Thr Ala Gly Gly Leu Ala Glu Ala Leu Ala Ala Ser Gly
                165                 170                 175
Gly Glu Leu Leu Leu Lys Thr Leu Gln Glu Ile Glu Ala Gly Thr Val
            180                 185                 190
Arg His Val Pro Gln Asn Glu Ala Met Leu Arg Trp Leu Leu Asn
        195                 200                 205
<210>938
<211>108
<212>PRT
<213>Chlamydia trachomatis
<400>938
Gly Arg Gly Arg Asp Ser Leu Gly Cys Ser Ser Phe Ser Ser Ile Arg
  1               5                  10                  15
Ala Tyr Pro Gly Ser Leu Ala Cys Ser Gly Arg Leu Asp Ser Leu Ser
             20                  25                  30
Ile Pro Arg Glu Arg Gly Xaa Arg Leu Gly Val Leu Ser Ala Arg Met
         35                  40                  45
Glu Ser Phe Ser Gly Asn Tyr Gly Asp Pro Gly Glu Val Leu Gly Val
     50                  55                  60
Ser Gly Glu Asp Leu Leu Ile Ala Cys Arg Gln Gly Ala Leu Arg Leu
 65                  70                  75                  80
Arg Met Val Gln Pro Glu Gly Lys Ala Ser Met Lys Ala Lys Asp Phe
                85                  90                  95
Phe Asn Gly Gln Ser Arg Leu Val Ser Lys Leu Phe
            100                 105
<210>939
<211>335
<212>PRT
<213>Chlamydia trachomatis
<400>939
Val Asn Met Ala Ala Ile Cys Gly Arg Leu Gly Ser Gly Thr Gly Asn
  1               5                  10                  15
Ala Leu Lys Ala Phe Phe Thr Gln Pro Ser Asn Lys Met Ala Arg Val
             20                  25                  30
Val Asn Lys Thr Lys Gly Met Asp Lys Thr Val Lys Val Ala Lys Ser
         35                  40                  45
Ala Ala Glu Leu Thr Ala Asn Ile Leu Glu Gln Ala Gly Gly Ala Gly
     50                  55                  60
Ser Ser Ala His Ile Thr Ala Ser Gln Val Ser Lys Gly Leu Gly Asp
 65                  70                  75                  80
Ala Arg Thr Val Leu Ala Leu Gly Asn Ala Phe Asn Gly Ala Leu Pro
                85                  90                  95
Gly Thr Val Gln Ser Ala Gln Ser Phe Phe Ser Tyr Met Lys Ala Ala
            100                 105                 110
Ser Gln Lys Pro Gln Glu Gly Asp Glu Gly Leu Val Ala Asp Leu Cys
        115                 120                 125
Val Ser His Lys Arg Arg Ala Ala Ala Ala Val Cys Ser Phe Ile Gly
    130                 135                 140
Gly Ile Thr Tyr Leu Ala Thr Phe Gly Ala Ile Arg Pro Ile Leu Phe
145                 150                 155                 160
Val Asn Lys Ile Trp Arg Asn Arg Phe Phe Leu Pro Lys Leu Lys Gln
                165                 170                 175
Ile Trp Asp Leu Leu Leu Ala Ile Leu Trp Arg Leu Thr Met Gln Arg
```

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```
            180                 185                 190
Leu Trp Trp Val Leu Asp Ser Leu Ser Val Arg Lys Glu Gln Ile Ala
        195                 200                 205
Lys Pro Pro Ala Leu Val Leu Arg Glu Lys Ser Arg His Ser Asn Cys
    210                 215                 220
Arg Glu Arg Lys Met Leu Ala Arg Gly Glu Ser Leu Glu Arg Lys Pro
225                 230                 235                 240
Arg Arg Ser Arg Ala Ser Ser Met His Ser Ser Leu Cys Thr Arg Ser
                245                 250                 255
Phe Trp Asn Ala Leu Pro Thr Phe Ser Asn Trp Cys Arg Cys Leu Leu
            260                 265                 270
Gln Trp Val Phe Val Gln Leu Trp Leu Arg Asp Val Arg Ser Leu Pro
        275                 280                 285
Gln Leu Leu Asp Cys Gly Leu Ser Ala Thr Glu Tyr Xaa Gly Phe Phe
    290                 295                 300
Lys Phe Leu Lys Lys Lys Ala Val Ser Lys Lys Lys Gln Pro Phe Leu
305                 310                 315                 320
Ser Thr Lys Cys Leu Ala Phe Leu Ile Val Lys Ile Val Phe Leu
                325                 330                 335
```

<210>940
<211>163
<212>PRT
<213>Chlamydia trachomatis
<400>940

```
Leu His Arg Arg Asn Tyr Leu Pro Arg Asp Ile Arg Ser Tyr Pro Ser
  1               5                  10                  15
Asp Ser Val Cys Gln Gln Asn Leu Ala Gln Pro Phe Leu Ser Ser Gln
             20                  25                  30
Thr Lys Ala Asn Met Gly Ser Ser Val Ser Tyr Ile Met Ala Ala Asn
         35                  40                  45
His Ala Ala Phe Val Val Gly Ser Gly Leu Ala Ile Ser Ala Glu Arg
     50                  55                  60
Ala Asp Cys Glu Ala Pro Cys Ala Arg Ile Ala Arg Glu Glu Ser Ser
 65                  70                  75                  80
Leu Glu Leu Ser Gly Glu Glu Asn Ala Cys Glu Arg Arg Val Ala Gly
                85                  90                  95
Glu Lys Ala Lys Thr Phe Thr Arg Ile Lys Tyr Ala Leu Leu Thr Met
            100                 105                 110
His Glu Lys Phe Leu Glu Cys Val Ala Asp Val Phe Lys Leu Val Pro
        115                 120                 125
Leu Pro Ile Thr Met Gly Ile Arg Ala Ile Val Ala Ala Gly Cys Thr
    130                 135                 140
Phe Thr Thr Ala Val Ile Gly Leu Trp Thr Phe Cys Asn Arg Val Xaa
145                 150                 155                 160
Gly Ile Phe
```

<210>941
<211>221
<212>PRT
<213>Chlamydia trachomatis
<400>941

```
Met Arg Ser Gln Leu Ser Leu Ile Gly Lys Lys Glu Gly Met Met His
  1               5                  10                  15
Val Phe Asp Lys Asn Gly Asn Leu Val Ala Cys Ser Val Ile Ser Val
             20                  25                  30
Asp Ala Asn Val Val Ala Gln Leu Lys Thr Ala Ser Ser Asp Gly Tyr
         35                  40                  45
Asn Ala Val Gln Ile Gly Ala Asp Val Val Gln Ala Pro Glu Lys Thr
     50                  55                  60
Ile Glu Lys Arg Phe Ser Lys Ala Leu Leu Gly His Phe Lys Lys Ser
 65                  70                  75                  80
```

```
Gly Gly Arg Ala Cys Arg Val Leu Lys Glu Val Val Val Ser Glu Glu
                    85                  90                  95
Ala Val Gln Ser Val Ser Leu Gly Asp Glu Phe Gly Leu Glu Ile Phe
            100                 105                 110
Asp Gly Val Ser Asn Val Asp Ile Cys Gly Ile Ser Lys Gly Lys Gly
        115                 120                 125
Phe Gln Gly Val Met Lys Lys Phe Gly Phe Arg Gly Gly Pro Lys Ser
    130                 135                 140
His Gly Ser Gly Phe His Arg His Ala Gly Ser Ile Gly Met Arg Ser
145                 150                 155                 160
Thr Pro Gly Arg Cys Phe Pro Gly Ser Lys Arg Pro Ser His Met Gly
                165                 170                 175
Cys Asp Arg Val Thr Val Lys Asn Leu Glu Val Val Lys Val Asp Leu
            180                 185                 190
Asp Arg Lys Val Met Leu Val Lys Gly Ala Ile Pro Gly Phe Lys Gly
        195                 200                 205
Ser Val Val Val Val Lys Arg Ser Cys Gly Val Glu Gly
    210                 215                 220
<210>942
<211>231
<212>PRT
<213>Chlamydia trachomatis
<400>942
Leu Arg Ser Arg Gly Val Glu Val Leu Met Val Leu Leu Ser Lys Phe
  1                 5                  10                  15
Asp Phe Ser Gly Lys Glu Leu Gly Lys Phe Glu Leu Pro Asp Ala Phe
             20                  25                  30
Phe Thr Glu Gly Arg Glu Gln Ser Val Lys Asp Tyr Leu Val Ala Ile
         35                  40                  45
Gln Ala Asn Lys Arg Gln Trp Ser Ala Cys Thr Arg Gly Arg Ser Glu
     50                  55                  60
Val Ser His Ser Thr Lys Lys Pro Phe Arg Gln Lys Gly Thr Gly Asn
 65                  70                  75                  80
Ala Arg Gln Gly Cys Leu Ala Ala Pro Gln Phe Arg Gly Gly Gly Ile
                85                  90                  95
Val Phe Gly Pro Lys Pro Lys Phe Asp Gln His Ile Arg Ile Asn Lys
            100                 105                 110
Lys Glu Arg Arg Ala Ala Ile Arg Leu Leu Leu Ala Gln Lys Ile Gln
        115                 120                 125
Thr Gly Lys Leu Ile Val Ala Glu Asn Ser Val Phe Val Ser Ser Leu
    130                 135                 140
Asp Ala Pro Lys Thr Lys Glu Ala Leu Arg Phe Leu Lys Glu Cys Asn
145                 150                 155                 160
Val Glu Cys Arg Gly Val Leu Phe Val Asp Ser Leu Ala His Val Gly
                165                 170                 175
Ser Asn Glu Asn Leu Arg Leu Ser Val Arg Asn Leu Ser Ala Val Arg
            180                 185                 190
Gly Phe Thr Tyr Gly Glu Asn Ile Ser Gly Tyr Asp Ile Ala Ala Ala
        195                 200                 205
Arg Asn Ile Val Val Ser Glu Lys Ala Leu Glu Leu Leu Val Glu Ser
    210                 215                 220
Leu Val Ser Thr Thr Lys Asp
225                 230
<210>943
<211>111
<212>PRT
<213>Chlamydia trachomatis
<400>943
Met Lys Asp Pro Tyr Asp Val Val Lys Arg His Tyr Val Thr Glu Lys
  1                 5                  10                  15
Ala Lys Met Leu Glu Gly Leu Ser Leu Gly Asp Gly Glu Gly Lys Lys
```

Sequence Listing

```
            20                  25                  30
Lys Gly Ser Phe Cys Lys Asp Pro Lys Tyr Thr Phe Ile Val Ala Gly
        35                  40                  45
Asp Ala Thr Lys Pro Met Ile Ala Glu Ala Ile Glu Ala Ile Tyr Ser
    50                  55                  60
Ala Lys Gly Val Lys Val Lys Lys Val Asn Thr Met Cys Val Lys Pro
65                  70                  75                  80
Gln Pro Thr Arg Ile Phe Arg Gly Arg Arg Lys Gly Arg Thr Ala Gly
                85                  90                  95
Phe Lys Lys Ala Ile Val Thr Phe Val Asp Gly His Ser Ile Gly
            100                 105                 110
```

<210>944
<211>284
<212>PRT
<213>Chlamydia trachomatis

<400>944

```
Met Phe Lys Lys Phe Lys Pro Val Thr Pro Gly Thr Arg Gln Leu Ile
  1               5                  10                  15
Leu Pro Ser Phe Asp Glu Leu Thr Thr Gln Gly Glu Leu Lys Gly Ser
            20                  25                  30
Ser Ser Arg Arg Ser Val Arg Pro Asn Lys Lys Leu Ser Phe Phe Lys
        35                  40                  45
Lys Ser Ser Gly Gly Arg Asp Asn Leu Gly His Ile Ser Cys Arg His
    50                  55                  60
Arg Gly Gly Gly Val Arg Arg His Tyr Arg Val Ile Asp Phe Lys Arg
65                  70                  75                  80
Asn Lys Asp Gly Ile Glu Ala Lys Val Ala Ser Val Glu Tyr Asp Pro
                85                  90                  95
Asn Arg Ser Ala Tyr Ile Ala Leu Leu Asn Tyr Val Asp Gly Glu Lys
            100                 105                 110
Arg Tyr Ile Leu Ala Pro Lys Gly Ile Lys Arg Gly Asp Arg Val Ile
        115                 120                 125
Ser Gly Glu Gly Ser Pro Phe Lys Thr Gly Cys Cys Met Thr Leu Lys
    130                 135                 140
Ser Ile Pro Leu Gly Leu Ser Val His Asn Val Glu Met Arg Pro Gly
145                 150                 155                 160
Ser Gly Gly Lys Leu Val Arg Ser Ala Gly Leu Ser Ala Gln Ile Ile
                165                 170                 175
Ala Lys Thr Ala Gly Tyr Val Thr Leu Lys Met Pro Ser Gly Glu Phe
            180                 185                 190
Arg Met Leu Asn Glu Met Cys Arg Ala Thr Val Gly Glu Val Ser Asn
        195                 200                 205
Ala Asp His Asn Leu Cys Val Asp Gly Lys Ala Gly Arg Arg Arg Trp
    210                 215                 220
Lys Gly Ile Arg Pro Thr Val Arg Gly Thr Ala Met Asn Pro Val Asp
225                 230                 235                 240
His Pro His Gly Gly Gly Glu Gly Arg His Asn Gly Tyr Ile Ser Gln
                245                 250                 255
Thr Pro Trp Gly Lys Val Thr Lys Gly Leu Lys Thr Arg Asp Lys Arg
            260                 265                 270
Lys Ser Asn Lys Trp Ile Val Lys Asp Arg Arg Lys
        275                 280
```

<210>945
<211>96
<212>PRT
<213>Chlamydia trachomatis

<400>945

```
Met Ser Arg Ser Leu Arg Lys Gly Pro Phe Val Asp His His Leu Leu
  1               5                  10                  15
Lys Lys Val Arg Asp Met Asn Ala Leu Glu Lys Lys Thr Pro Ile Lys
            20                  25                  30
```

```
Thr Trp Ser Arg Arg Ser Met Ile Thr Pro Glu Met Ile Gly His Thr
          35                  40                  45
Phe Glu Val His Asn Gly Arg Lys Phe Leu Thr Val Phe Val Ser Glu
      50                  55                  60
Thr Met Val Gly His Lys Leu Gly Glu Phe Ser Pro Thr Arg Met Phe
 65                  70                  75                  80
Lys Ser His Pro Val Lys Lys Gly Tyr His Lys Glu Thr Gly Tyr Val
                 85                  90                  95
<210>946
<211>145
<212>PRT
<213>Chlamydia trachomatis
<400>946
Leu Cys Gln Lys Leu Trp Leu Asp Thr Ser Trp Glu Ser Ser Leu Gln
  1               5                  10                  15
Gln Glu Cys Leu Arg Ala Ile Pro Leu Lys Lys Gly Ile Ile Arg Arg
            20                  25                  30
Gln Val Met Phe Lys Ala Thr Ala Arg Tyr Ile Arg Val Gln Pro Arg
          35                  40                  45
Lys Ala Arg Leu Ala Ala Gly Leu Met Arg Asn Arg Ser Val Val Glu
      50                  55                  60
Ala Gln Gln Gln Leu Ser Phe Ser Gln Met Lys Ala Gly Arg Cys Leu
 65                  70                  75                  80
Lys Lys Val Leu Asp Ser Ala Ile Ala Asn Ala Glu Ser Asn Glu Asn
                 85                  90                  95
Ile Lys Arg Glu Asn Leu Cys Val Leu Glu Val Arg Val Asp Ala Gly
            100                 105                 110
Pro Met Phe Lys Arg Met Lys Ser Lys Ser Arg Gly Gly Arg Ala Pro
        115                 120                 125
Ile Leu Lys Arg Thr Ser His Leu Thr Val Ile Val Gly Glu Arg Gly
    130                 135                 140
Gln
145
<210>947
<211>219
<212>PRT
<213>Chlamydia trachomatis
<400>947
Met Ser Ser Arg Val Xaa Thr Ala Val Thr Lys Lys Trp Arg Ser Leu
  1               5                  10                  15
Trp Tyr Gly Asn Asn Gln Glu Phe Ala Lys Phe Leu Ile Glu Asp Val
            20                  25                  30
Lys Ile Arg Glu Phe Leu Lys Lys Lys Pro Ser Cys Gln Gly Ala Ala
          35                  40                  45
Gly Phe Val Val Lys Arg Met Ser Gly Lys Ile Glu Val Thr Ile His
      50                  55                  60
Thr Ala Arg Pro Gly Leu Val Ile Gly Lys Lys Gly Ala Glu Val Asp
 65                  70                  75                  80
Ser Leu Lys Ala Glu Leu Lys Lys Leu Thr Gly Lys Asp Val Trp Val
                 85                  90                  95
Glu Ile Ala Glu Val Lys Arg Pro Glu Leu Asn Ala Gln Leu Val Ala
            100                 105                 110
Asp Gly Ile Ala Lys Gln Ile Glu Arg Arg Val Ser Phe Arg Arg Ala
        115                 120                 125
Met Lys Lys Ala Leu Gln Ser Val Met Asp Ala Gly Ala Leu Gly Val
    130                 135                 140
Lys Val Gln Val Ser Gly Arg Leu Ala Gly Ala Glu Ile Ala Arg Ser
145                 150                 155                 160
Glu Trp Tyr Lys Asn Gly Arg Val Pro Leu His Thr Leu Arg Ala Asp
                165                 170                 175
Ile Asp Tyr Ala Thr Ala Ser Ala Glu Thr Thr Tyr Gly Ile Ile Gly
```

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```
            180                 185                 190
Ile Lys Val Trp Ile Asn Leu Gly Glu Lys Lys Ala Val Pro Ala Ala
        195                 200                 205
Asn His Ala Gly Ala Ala Ser Thr Ala Ala Ala
    210                 215
<210>948
<211>143
<212>PRT
<213>Chlamydia trachomatis
<400>948
Met Asn Gln Tyr Ala Lys Ala Ala Gly Lys Arg Thr Lys Phe Arg Lys
  1               5                  10                  15
Gln Gln Lys Gly Gln Phe Ala Gly Leu Ser Lys Gly Ala Thr Phe Val
             20                  25                  30
Asp Phe Gly Glu Phe Gly Met Gln Thr Leu Glu Arg Gly Trp Ile Thr
         35                  40                  45
Ser Arg Gln Ile Glu Ala Cys Arg Val Ala Ile Asn Arg Tyr Leu Lys
     50                  55                  60
Arg Lys Gly Lys Val Trp Ile Arg Val Phe Pro Asp Lys Ser Val Thr
 65                  70                  75                  80
Lys Lys Pro Ala Glu Thr Arg Met Gly Lys Gly Lys Gly Ala Pro Asp
                 85                  90                  95
His Trp Val Ala Val Val Arg Pro Gly Arg Ile Leu Phe Glu Val Ala
            100                 105                 110
Asn Val Ser Lys Glu Asp Ala Gln Asp Ala Leu Arg Arg Ala Ala Ala
        115                 120                 125
Lys Leu Gly Ile Arg Thr Arg Phe Val Lys Arg Val Glu Arg Val
    130                 135                 140
<210>949
<211>81
<212>PRT
<213>Chlamydia trachomatis
<400>949
Leu Leu Ser Val Trp Lys Gly Tyr Ser Met Gly Ala Lys Lys Asn Leu
  1               5                  10                  15
Leu Ala Glu Leu Arg Glu Lys Ser Ser Glu Glu Leu Asp Glu Phe Ile
             20                  25                  30
Arg Asp Asn Lys Lys Ala Leu Phe Ala Leu Arg Ala Glu Ala Ala Leu
         35                  40                  45
Gln Asn Lys Val Val Lys Thr His Gln Phe Ser Leu Tyr Lys Lys Ser
     50                  55                  60
Ile Ala Arg Ala Leu Ile Ile Lys Gln Glu Lys Lys Asp Arg Val His
 65                  70                  75                  80
Gly

<210>950
<211>83
<212>PRT
<213>Chlamydia trachomatis
<400>950
Met Ala Ser Asp Val Arg Gly Arg Arg Lys Thr Lys Ile Gly Val Val
  1               5                  10                  15
Val Ser Ser Lys Met Glu Lys Thr Val Val Val Arg Val Glu Arg Val
             20                  25                  30
Tyr Ser His Pro Gln Tyr Ala Lys Val Val Arg Asp Ser Ser Lys Tyr
         35                  40                  45
Tyr Ala His Asn Glu Leu Asp Val Lys Glu Gly Asp Thr Val Arg Ile
     50                  55                  60
Gln Glu Thr Arg Pro Leu Ser Lys Thr Lys Arg Trp Arg Val Val Gly
 65                  70                  75                  80
Arg Val Asn
```

<210>951
<211>122
<212>PRT
<213>Chlamydia trachomatis
<400>951
Met Ile Gln Gln Glu Ser Gln Leu Lys Val Ala Asp Asn Thr Gly Ala
1 5 10 15
Lys Lys Val Lys Cys Phe Lys Val Leu Gly Gly Ser Arg Arg Arg Tyr
20 25 30
Ala Thr Val Gly Asp Val Ile Val Cys Ser Val Arg Asp Ile Glu Pro
35 40 45
Asp Ser Ser Val Lys Lys Gly Asp Val Val Lys Ala Val Ile Val Arg
50 55 60
Thr Arg Asn Asp Ile His Arg Lys Asp Gly Ser Thr Leu Arg Phe Asp
65 70 75 80
Thr Asn Ser Cys Val Ile Ile Asp Asp Lys Gly Asn Pro Lys Gly Thr
85 90 95
Arg Ile Phe Gly Pro Val Ala Arg Glu Ile Arg Asp Arg Gly Phe Val
100 105 110
Lys Ile Ser Ser Leu Ala Pro Glu Val Ile
115 120
<210>952
<211>111
<212>PRT
<213>Chlamydia trachomatis
<400>952
Met Lys Arg Arg Ser Val Cys Val Gly Asp Thr Val Tyr Val Leu Ala
1 5 10 15
Gly Asn Asp Lys Gly Lys Gln Gly Lys Val Leu Arg Cys Leu Lys Asp
20 25 30
Lys Val Val Val Glu Gly Ile Asn Val Arg Val Lys Asn Ile Lys Arg
35 40 45
Ser Gln Glu Asn Pro Lys Gly Lys Arg Ile Asn Ile Glu Ala Pro Leu
50 55 60
His Ile Ser Asn Val Arg Leu Ser Ile Asp Asn Gln Pro Ala Arg Leu
65 70 75 80
Phe Val Lys Val Thr Glu Lys Gly Arg Glu Leu Trp Asn Lys His Ser
85 90 95
Asp Gly Ser Ser Ser Leu Tyr Arg Leu Val Arg Glu Arg Lys Gly
100 105 110
<210>953
<211>180
<212>PRT
<213>Chlamydia trachomatis
<400>953
Met Ser Arg Leu Lys Lys Leu Tyr Thr Glu Glu Ile Arg Lys Thr Leu
1 5 10 15
Gln Asp Lys Phe Gln Tyr Glu Asn Val Met Gln Ile Pro Val Leu Lys
20 25 30
Lys Ile Val Ile Ser Met Gly Leu Ala Glu Ala Ala Lys Asp Lys Asn
35 40 45
Leu Phe Gln Ala His Leu Glu Glu Leu Ala Val Ile Ser Gly Gln Lys
50 55 60
Pro Leu Val Thr Arg Ala Lys Asn Ser Ile Ala Gly Phe Lys Leu Arg
65 70 75 80
Glu Gly Gln Gly Ile Gly Ala Lys Val Thr Leu Arg Gly Ile Arg Met
85 90 95
Tyr Asp Phe Met Asp Arg Phe Cys Asn Ile Val Ser Pro Arg Ile Arg
100 105 110
Asp Phe Arg Gly Phe Ser Cys Lys Gly Asp Gly Arg Gly Cys Tyr Ser

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```
        115                 120                 125
Leu Gly Leu Asp Asp Gln Gln Ile Phe Pro Glu Val Asp Leu Asp Arg
    130                 135                 140
Val Lys Arg Ser Gln Gly Met Asn Ile Thr Trp Val Thr Thr Ala Gln
145                 150                 155                 160
Thr Asp Ala Glu Cys Leu Thr Leu Leu Glu Cys Met Gly Leu Arg Phe
                165                 170                 175
Lys Lys Ala Gln
            180
```

<210>954
<211>98
<212>PRT
<213>Chlamydia trachomatis
<400>954

```
Ser Asn Ile Arg Ile Leu Lys Gln His Gly Phe Val Ala His Phe Leu
  1               5                  10                  15
Val Lys Glu Glu Asn Arg Lys Arg Leu Met Arg Val Phe Leu Arg Tyr
            20                  25                  30
Gly Glu Asp Arg Arg Pro Val Ile His Ala Leu Lys Arg Val Ser Lys
        35                  40                  45
Pro Ser Arg Arg Val Tyr Val Ser Ala Ala Lys Ile Pro Tyr Val Phe
    50                  55                  60
Gly Asn Met Gly Ile Ala Val Leu Ser Thr Pro Gln Gly Val Leu Glu
65                  70                  75                  80
Gly Ser Val Ala Arg Ala Lys Asn Val Gly Gly Glu Leu Leu Cys Leu
                85                  90                  95
Val Trp
```

Sequence Listing

<210>955
<211>183
<212>PRT
<213>Chlamydia trachomatis
<400>955

```
Met Ser Arg Lys Ala Arg Asp Pro Ile Val Leu Pro Gln Gly Val Glu
  1               5                  10                  15
Val Ser Ile Gln Asn Asp Glu Ile Ser Val Lys Gly Pro Lys Gly Ser
            20                  25                  30
Leu Thr Gln Val Leu Ala Lys Glu Val Glu Ile Ala Val Lys Gly Asn
        35                  40                  45
Glu Val Phe Val Ala Pro Ala Ala His Val Val Asp Arg Pro Gly Arg
    50                  55                  60
Met Gln Gly Leu Tyr Trp Ala Leu Ile Ala Asn Met Val Lys Gly Val
65                  70                  75                  80
His Thr Gly Phe Glu Lys Arg Leu Glu Met Ile Gly Val Gly Phe Arg
                85                  90                  95
Ala Ala Val Gln Gly Ser Leu Leu Asp Leu Ser Ile Gly Val Ser His
            100                 105                 110
Pro Thr Lys Met Pro Ile Pro Thr Gly Leu Glu Val Ser Val Glu Lys
        115                 120                 125
Asn Thr Leu Ile Ser Ile Lys Gly Ile Asn Lys Gln Leu Val Gly Glu
    130                 135                 140
Phe Ala Ala Cys Val Arg Ala Lys Arg Pro Pro Glu Pro Tyr Lys Gly
145                 150                 155                 160
Lys Gly Ile Arg Tyr Glu Asn Glu Tyr Val Arg Arg Lys Ala Gly Lys
                165                 170                 175
Ala Ala Lys Thr Gly Lys Lys
            180
```

<210>956
<211>126
<212>PRT
<213>Chlamydia trachomatis

<400>956
Ser Arg Thr Met Glu Ser Ser Leu Tyr Lys Lys Thr Ser Gly Lys Ala
1 5 10 15
Arg Arg Ala Leu Arg Val Arg Lys Ala Leu Lys Gly Cys Ser Leu Lys
20 25 30
Pro Arg Leu Ser Val Val Lys Thr Asn Lys His Val Tyr Val Gln Leu
35 40 45
Ile Asp Asp Val Glu Gly Lys Thr Leu Ala Phe Ile Ser Thr Leu Ala
50 55 60
Lys Val Ala Lys Thr Ser Gly Leu Thr Arg Lys Asn Gln Asp Asn Ala
65 70 75 80
Lys Ala Leu Gly Ile Lys Ile Ala Glu Leu Gly Lys Gly Leu Gln Val
85 90 95
Asp Arg Val Val Phe Asp Arg Gly Ala His Lys Tyr His Gly Val Val
100 105 110
Ala Met Val Pro Asp Gly Ala Arg Glu Gly Gly Leu Gln Phe
115 120 125
<210>957
<211>165
<212>PRT
<213>Chlamydia trachomatis
<400>957
Xaa Thr Leu Ser Arg Asn Ser His Lys Glu Asp Gln Leu Glu Glu Lys
1 5 10 15
Val Leu Val Val Asn Arg Cys Cys Lys Val Val Lys Gly Gly Arg Lys
20 25 30
Phe Ser Phe Ser Ala Leu Ile Leu Val Gly Asp Arg Lys Gly Arg Leu
35 40 45
Gly Phe Gly Phe Ala Lys Ala Asn Glu Leu Thr Asp Ala Ile Arg Lys
50 55 60
Gly Gly Asp Ala Ala Arg Lys Asn Leu Val Ser Ile Asn Ser Leu Glu
65 70 75 80
Gly Gly Ser Ile Pro His Glu Val Leu Val Asn His Asp Gly Ala Glu
85 90 95
Leu Leu Leu Lys Pro Ala Lys Pro Gly Thr Gly Ile Val Ala Gly Ser
100 105 110
Arg Ile Arg Leu Ile Leu Glu Met Ala Gly Val Lys Asp Ile Val Ala
115 120 125
Lys Ser Leu Gly Ser Asn Asn Pro Met Asn Gln Val Lys Ala Ala Phe
130 135 140
Xaa Ala Leu Leu Thr Leu Ser Cys Lys Asp Asp Ile Met Lys Arg Arg
145 150 155 160
Ala Val Ile Asn Asp
165
<210>958
<211>144
<212>PRT
<213>Chlamydia trachomatis
<400>958
Met Ile Lys Leu Glu Cys Leu Gln Asp Pro Ser Pro Arg Lys Arg Arg
1 5 10 15
Thr Lys Leu Leu Gly Arg Gly Pro Ser Thr Gly His Gly Lys Thr Ser
20 25 30
Gly Arg Gly His Lys Gly Asp Gly Ser Arg Ser Gly Tyr Lys Arg Arg
35 40 45
Phe Gly Tyr Glu Gly Gly Gly Val Pro Leu Tyr Arg Arg Val Pro Thr
50 55 60
Arg Gly Phe Ser His Lys Arg Phe Asp Lys Cys Val Glu Glu Ile Thr
65 70 75 80
Thr Gln Arg Leu Asn Glu Ile Phe Asp Asn Gly Ala Glu Val Ser Leu
85 90 95

Sequence Listing

Glu Ala Leu Lys Glu Arg Lys Val Ile His Arg Glu Thr Ser Arg Val
100 105 110
Lys Val Ile Leu Lys Gly Ala Leu Asp Lys Lys Leu Val Trp Lys Asp
115 120 125
Ala Ala Ile Val Leu Ser Glu Gly Val Lys Ser Leu Ile Glu Ala Val
130 135 140

<210>959
<211>457
<212>PRT
<213>Chlamydia trachomatis
<400>959

Met Ala Thr Leu Arg Gln Val Phe Ser Ile Ser Glu Leu Arg Gln Lys
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Ile Phe Phe Thr Phe Ser Leu Leu Ala Leu Cys Lys Ile Gly Val Phe
20 25 30
Ile Pro Val Pro Gly Ile Asn Gly Asp Arg Ala Val Ala Tyr Phe Asn
35 40 45
Gln Leu Leu Gly Ser Ser Gln Asn Leu Phe Gln Leu Ala Asp Ile Phe
50 55 60
Ser Gly Gly Ala Phe Ala Gln Met Thr Val Ile Ala Leu Gly Val Val
65 70 75 80
Pro Tyr Ile Ser Ala Ser Ile Ile Val Gln Leu Leu Val Val Phe Met
85 90 95
Pro Thr Leu Gln Arg Glu Met Arg Glu Ser Pro Asp Gln Gly Lys Arg
100 105 110
Lys Leu Gly Arg Met Thr Arg Leu Phe Thr Leu Val Leu Ala Cys Val
115 120 125
Gln Ser Leu Leu Phe Ala Lys Phe Ala Leu Arg Met Asn Leu Val Val
130 135 140
Pro Gly Ile Val Leu Pro Ala Met Leu Ser Leu Lys Leu Phe Gly Val
145 150 155 160
Pro Trp Val Phe Tyr Leu Thr Thr Val Val Val Met Thr Thr Gly Thr
165 170 175
Leu Leu Leu Met Trp Val Gly Glu Gln Ile Ser Asp Lys Gly Ile Gly
180 185 190
Asn Gly Ile Ser Leu Ile Ile Thr Leu Gly Ile Leu Ala Ser Phe Pro
195 200 205
Ser Val Leu Gly Ser Ile Phe Asn Lys Leu Asn Leu Gly Ser Gln Asp
210 215 220
Pro Ser Glu Phe Gly Ile Val Ser Leu Leu Ile Leu Cys Ala Val Phe
225 230 235 240
Val Phe Val Leu Ile Ala Thr Val Leu Ile Ile Glu Gly Val Arg Lys
245 250 255
Ile Pro Val Gln His Ala Arg Arg Ile Ile Gly Arg Arg Glu Val Val
260 265 270
Gly Gly Gly Ser Tyr Leu Pro Leu Lys Val Asn Tyr Ala Gly Val Ile
275 280 285
Pro Val Ile Phe Ala Ser Ser Leu Leu Met Phe Pro Ala Thr Ile Gly
290 295 300
Gln Phe Leu Ser Ser Glu Ser Ser Trp Leu Lys Arg Ile Ala Thr Met
305 310 315 320
Leu Ser Pro Gly Ser Val Ala Tyr Ser Ile Phe Tyr Val Leu Leu Ile
325 330 335
Ile Phe Phe Thr Tyr Phe Trp Thr Ala Thr Gln Phe Arg Pro Glu Gln
340 345 350
Ile Ala Ser Glu Met Lys Lys Asn Gly Ala Phe Ile Pro Gly Ile Arg
355 360 365
Gln Gly Lys Pro Thr Gln Thr Tyr Leu Glu Tyr Thr Met Asn Arg Val
370 375 380
Thr Leu Leu Gly Ala Val Phe Leu Ala Val Val Ala Ile Leu Pro Ser
385 390 395 400

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Val Leu Gly Arg Ile Leu Arg Val Asp Ala Asn Val Ser Tyr Phe Leu
405 410 415
Gly Gly Thr Ala Met Leu Ile Val Val Gly Val Ile Leu Asp Thr Met
420 425 430
Lys Gln Ile Asp Ala Phe Leu Leu Val Arg Arg Tyr Asp Gly Val Leu
435 440 445
Lys Lys Asp Arg Pro Lys Gly Arg Pro
450 455

<210>960
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<212>PRT
<213>Chlamydia trachomatis
<400>960
Met Pro Arg Ile Ile Gly Ile Asp Ile Pro Ala Lys Lys Lys Leu Lys
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Ile Ser Leu Thr Tyr Ile Tyr Gly Ile Gly Pro Ala Leu Ser Lys Glu
20 25 30
Ile Ile Ala Arg Leu Gln Leu Asn Pro Glu Ala Arg Ala Ala Glu Leu
35 40 45
Thr Glu Glu Glu Val Gly Arg Leu Asn Ala Leu Leu Gln Ser Asp Tyr
50 55 60
Val Val Glu Gly Asp Leu Arg Arg Arg Val Gln Ser Asp Ile Lys Arg
65 70 75 80
Leu Ile Thr Ile His Ala Tyr Arg Gly Gln Arg His Arg Leu Ser Leu
85 90 95
Pro Val Arg Gly Gln Arg Thr Lys Thr Asn Ser Arg Thr Arg Lys Gly
100 105 110
Lys Arg Lys Thr Ile Ala Gly Lys Lys Lys
115 120

<210>961
<211>132
<212>PRT
<213>Chlamydia trachomatis
<400>961
Leu Val Lys Asn Gln Ala Gln Lys Arg Gly Val Lys Arg Lys Gln Val
1 5 10 15
Lys Asn Ile Pro Ser Gly Val Val His Val Lys Ala Thr Phe Asn Asn
20 25 30
Thr Ile Val Thr Ile Thr Asp Pro Ala Gly Asn Val Ile Ser Trp Ala
35 40 45
Ser Ala Gly Lys Val Gly Tyr Ser Gly Ser Arg Lys Ser Ser Ala Phe
50 55 60
Ala Ala Thr Val Ala Ala Gln Asp Ala Ala Lys Ala Ala Met Ser Ser
65 70 75 80
Gly Leu Lys Glu Val Glu Val Gly Leu Lys Gly Thr Gly Ala Gly Arg
85 90 95
Glu Ser Ala Val Arg Ala Leu Ile Ser Ser Gly Leu Ile Val Ser Val
100 105 110
Ile Arg Asp Glu Thr Pro Val Pro His Asn Gly Cys Arg Pro Arg Lys
115 120 125
Arg Arg Arg Val
130

<210>962
<211>193
<212>PRT
<213>Chlamydia trachomatis
<400>962
Val Ser Thr Lys Lys Thr Thr Lys Ser Val Val Ile Ala Lys Glu Phe
1 5 10 15
Gly Met Ser Asp Ser Ser His Asn Leu Leu Tyr Asn Lys Phe Glu Leu
20 25 30

Substitute Page

```
Pro Glu Ser Val Lys Met Ser Pro Val Glu Gly Ala Val Gly Gly Ile
          35                  40                  45
Asp Lys Val Ala Arg Phe Val Ala Asp Pro Leu Glu Lys Gly Met Gly
      50                  55                  60
His Thr Leu Gly Ser Ala Leu Arg Arg Ala Leu Leu Ile Gly Leu Glu
 65                  70                  75                  80
Ala Pro Ala Ile Val Ser Phe Ser Met Thr Gly Val Leu His Glu Tyr
                 85                  90                  95
Met Ala Val Glu Gly Ile Ile Glu Asp Val Thr Asn Ile Val Leu Asn
            100                 105                 110
Leu Lys Gly Ser Leu Leu Lys Lys Tyr Pro Leu Gln Asp Cys Glu Gly
        115                 120                 125
Gly Arg Cys Ser Gln Lys Leu Arg Ala Thr Ile Ser Val Asp Ala Ser
    130                 135                 140
Asp Leu Ala Ala Ala Gly Gly Gln Lys Glu Val Thr Leu Gly Asp Leu
145                 150                 155                 160
Leu Gln Glu Gly Thr Phe Glu Ala Val Asn Pro Glu His Val Ile Phe
                165                 170                 175
Thr Val Thr Arg Pro Met Gln Leu Glu Val Met Leu Pro Ser Cys Phe
            180                 185                 190
Trp
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<210>963
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<212>PRT
<213>Chlamydia trachomatis
<400>963

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Phe Leu Arg Ser Arg Val Gln Cys Asn Leu Arg Leu Cys Cys Arg Val
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Arg Gly Met Asn Glu Ile Val Leu Asp Ala Ala Phe Ser Pro Val Val
         35                  40                  45
Leu Val Asn Tyr Phe Val Glu Asp Thr Arg Val Gly Gln Asp Thr Asp
     50                  55                  60
Phe Asp Arg Leu Val Leu Gln Val Glu Thr Asp Gly Arg Val Ala Pro
 65                  70                  75                  80
Lys Glu Ala Val Ala Phe Ala Thr Gln Ile Leu Ser Lys His Phe Ser
                 85                  90                  95
Val Phe Glu Lys Met Asp Glu Lys Arg Ile Val Phe Glu Glu Ala Ile
            100                 105                 110
Ser Val Glu Lys Glu Asn Lys Asp Asp Ile Leu His Lys Leu Val Leu
        115                 120                 125
Gly Ile Asn Glu Ile Glu Leu Ser Val Arg Ser Thr Asn Cys Leu Ser
    130                 135                 140
Asn Ala Asn Ile Glu Thr Ile Gly Glu Leu Val Ile Met Pro Glu Pro
145                 150                 155                 160
Arg Leu Leu Gln Phe Arg Asn Phe Gly Lys Lys Ser Leu Cys Glu Ile
                165                 170                 175
Lys Asn Lys Leu Lys Glu Met Lys Leu Glu Leu Gly Met Asp Leu Ser
            180                 185                 190
Gln Phe Gly Val Gly Leu Asp Asn Val Lys Glu Lys Met Lys Trp Tyr
        195                 200                 205
Ala Glu Lys Ile Arg Ser Ser Lys Asn Thr Lys Gly
    210                 215                 220
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<210>964
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<213>Chlamydia trachomatis
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Arg Ile Gly Arg Leu Val Leu Arg Gln Ile Leu Lys Arg Asn Ser Pro
            20                  25                  30
Ile Glu Val Val Ala Ile Asn Asp Leu Val Ala Gly Asp Leu Leu Thr
        35                  40                  45
Tyr Leu Phe Lys Tyr Asp Ser Thr His Gly Ser Phe Ala Pro Gln Ala
    50                  55                  60
Thr Phe Ser Asp Gly Cys Leu Val Met Gly Glu Arg Lys Ile Arg Phe
65                  70                  75                  80
Leu Ala Glu Lys Xaa Val Gln Lys Leu Pro Trp Lys Asp Leu Asp Val
                85                  90                  95
Asp Val Val Ile Glu Ser Thr Gly Leu Phe Val Asn Arg Asp Asp Ala
            100                 105                 110
Ala Lys His Leu Asp Ser Gly Ala Lys Arg Val Leu Ile Thr Ala Pro
        115                 120                 125
Ala Lys Gly Asp Val Pro Thr Phe Val Met Gly Val Asn His Gln Gln
    130                 135                 140
Phe Asp Pro Ala Asp Val Ile Ile Ser Asn Ala Ser Cys Thr Thr Asn
145                 150                 155                 160
Cys Leu Ala Pro Leu Ala Lys Val Leu Leu Asp Asn Phe Gly Ile Glu
                165                 170                 175
Glu Gly Leu Met Thr Thr Val His Ala Ala Thr Ala Thr Gln Ser Val
            180                 185                 190
Val Asp Gly Pro Ser Arg Lys Asp Trp Arg Gly Gly Arg Gly Ala Phe
        195                 200                 205
Gln Asn Ile Ile Pro Ala Ser Thr Gly Ala Ala Lys Ala Val Gly Leu
    210                 215                 220
Cys Leu Pro Glu Leu Lys Gly Lys Leu Thr Gly Met Ala Phe Arg Val
225                 230                 235                 240
Pro Val Ala Asp Val Ser Val Val Asp Leu Thr Val Lys Leu Ser Ser
                245                 250                 255
Ala Thr Thr Tyr Glu Ala Ile Cys Glu Ala Val Lys His Ala Ala Asn
            260                 265                 270
Thr Ser Met Lys Asn Ile Met Tyr Tyr Thr Glu Glu Ala Val Val Ser
        275                 280                 285
Ser Asp Phe Ile Gly Cys Glu Tyr Ser Ser Ile Phe Asp Ala Gln Ala
    290                 295                 300
Gly Val Ala Leu Asn Asp Arg Phe Phe Lys Leu Val Ala Trp Tyr Asp
305                 310                 315                 320
Asn Glu Ile Gly Tyr Ala Thr Arg Ile Val Asp Leu Leu Glu Tyr Val
                325                 330                 335
Gln Glu Asn Ser Lys
            340
<210>965
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<212>PRT
<213>Chlamydia trachomatis
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Ser Thr Tyr Lys Lys Thr Leu Asn Lys Gly Ser Phe Val Tyr Phe Thr
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Arg Asp Pro Val Ile Glu Thr Val Ile Thr Ser Arg Glu Gly Tyr Lys
            20                  25                  30
Leu Ser Ile Arg Asn Ser Lys His Leu Ser Gln Asp Pro Phe Val Val
        35                  40                  45
Glu Ala Ile Glu Val Val Arg Leu Gly Gly Thr Ser Phe Phe Arg Asn
    50                  55                  60
Cys Asp His Ser Lys Pro Phe Leu Leu Pro Ala Ser Asp Tyr Glu Val
65                  70                  75                  80
Met Glu Ile Arg Asp Ala Lys Ile Asn Leu Lys Ala Val Gly Leu Asp
                85                  90                  95
Arg Gly Val Lys Ile Val Gly Ser Arg Glu Ala Leu Leu Lys Met Pro
```

```
            100                 105                 110
Lys Val Ala Pro Ile Val Ser Val Ser Glu Asp Asn Thr Ile Val Ser
        115                 120                 125
Glu Glu Glu Val Val Ala Asp Ser Thr Val Ala Leu Pro Leu Leu His
    130                 135                 140
Leu
145
<210>966
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<212>PRT
<213>Chlamydia trachomatis
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Arg Arg Gly Ser Cys Arg Leu Tyr Cys Cys Thr Pro Ala Ser Thr Pro
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Val Ala Pro Met Ser Lys Lys Glu Arg Arg Lys Glu Phe Lys Asn Glu
            20                  25                  30
Lys Trp Lys Asp Lys Lys Lys Gln Gly Arg Arg Arg Asn Ser Lys Glu
        35                  40                  45
Ile Ala Asp Ala Val Gly Ser Ser Gln Glu Met Ile Asp Thr Val Ala
    50                  55                  60
Glu Glu Cys Leu Gln Glu Ser Ser Ser Glu Glu Gly Asp Phe Ser Glu
65                  70                  75                  80
Arg Arg Phe Ser Leu Ile Pro Pro Pro Thr Arg Leu Ile Ser Asp Gly
                85                  90                  95
Pro Glu Glu Pro Glu Glu Glu Ser Gln Pro Val Thr Ser Val Asp Leu
            100                 105                 110
Asn Glu Ser Leu Asn Ala Leu Val Ser Glu Ser Cys Asn Val Ile Glu
        115                 120                 125
Ser Ile Leu Ala Asp Glu Asp Thr Val Val Phe Thr Lys Glu Lys Asp
    130                 135                 140
Gln Thr Ala Glu Glu Ser Gln Glu Gln Pro Ser Phe His
145                 150                 155
<210>967
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<213>Chlamydia trachomatis
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Phe Ile Asp Glu Glu Ser Tyr Leu Thr Trp Gly Ile Ser Leu Met Trp
  1               5                  10                  15
Leu Trp Ser Leu Val Lys Leu Arg Leu Leu Ser Leu Leu Arg Phe Arg
            20                  25                  30
Lys Val Arg Ala Phe Thr Ser Pro Asp Gln Tyr Glu Glu Tyr Ser Arg
        35                  40                  45
Ser Met Leu Gln Leu Phe Cys Leu Trp Lys Asp Ser Asp Ile Val Glu
    50                  55                  60
Trp Glu Asn Thr Cys Gln Met Leu Phe Gly Val Cys Ser Lys Met Ser
65                  70                  75                  80
Glu Val Cys Leu Glu Thr Arg Ser Arg Cys Lys Ser Asn Leu Arg Val
                85                  90                  95
Lys Asn Asn His
            100
<210>968
<211>137
<212>PRT
<213>Chlamydia trachomatis
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Tyr Cys Gly Met Gly Glu Tyr Leu Ser Asp Val Val Trp Cys Leu Phe
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Lys Asn Glu Arg Ser Leu Leu Arg Asn Lys Lys Gln Met Gln Ile Gln
            20                  25                  30
Ser Ala Ser Lys Glu Gln Ser Leu Ala Glu Trp Glu Gln Gln Val Cys
```

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```
          35                  40                  45
Glu Leu Lys Ser Gln Leu Ala Ser Gln Glu Asn Ala Asn Gln Gln Glu
     50                  55                  60
Ile Ser Lys Leu Gln Ala Glu Asn His Trp Leu Gln Asn Arg Leu Ala
 65                  70                  75                  80
Glu Lys Leu Gln Gln Ala Arg His Gln Asn Asp Val Ile Asp Glu Leu
                85                  90                  95
Lys Arg Asp Leu Val Glu Ser Val Gln Gln Met Glu Val Ser Glu Gly
            100                 105                 110
Arg Arg Leu Cys Tyr Glu His Lys Ile Arg Val Leu Glu Glu Gln Ile
        115                 120                 125
Asp Arg Phe Leu Ala Lys Glu Glu Val
    130                 135
<210>969
<211>170
<212>PRT
<213>Chlamydia trachomatis
<400>969
Met Ala Asp Leu Ile Met Gly Ile Asp Pro Gly Thr Leu Val Cys Gly
  1                 5                  10                  15
Tyr Ala Leu Ile Lys Val Glu Asn Arg Tyr His Ile His Pro His Ser
            20                  25                  30
Phe Gly Lys Val Lys Leu Ser Gln Lys Leu Ala Leu Ala His Arg Tyr
        35                  40                  45
Lys Gln Leu Phe Thr Glu Ile Ser Thr Ile Leu Gln Gln Glu Ser Pro
     50                  55                  60
Lys Ala Val Val Leu Glu Thr Gln Tyr Val His Lys Asn Pro Gln Ser
 65                  70                  75                  80
Thr Ile Lys Leu Gly Met Ala Arg Gly Val Leu Leu Leu Ala Ala Ser
                85                  90                  95
Leu Gln Asp Val Pro Val Phe Glu Tyr Ala Pro Asn Thr Ala Lys Lys
            100                 105                 110
Ala Ala Val Gly Lys Gly Asn Ala Ser Lys Lys Gln Val Gln Leu Met
        115                 120                 125
Val Ser Lys Leu Leu Arg Val Pro Asp Leu Leu Ala Glu Asp Asn Glu
    130                 135                 140
Asp Ile Ala Asp Ala Phe Ala Leu Ala Met Cys His Ala His Leu Ala
145                 150                 155                 160
Pro Tyr Gln Asp Leu Lys Lys Thr Leu Val
                165                 170
<210>970
<211>200
<212>PRT
<213>Chlamydia trachomatis
<400>970
Met Tyr Glu Tyr Ile Lys Gly Thr Leu Thr His Ile Asp Gly Ser Tyr
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Val Val Ile Glu Ser Phe Gly Ile Gly Tyr Ala Ile Met Leu Ser Glu
            20                  25                  30
Arg Phe Leu Val Asp Leu Arg Ala Phe Met His Gln Glu Val Leu Ile
        35                  40                  45
Tyr Val His Ser Val Ile Arg Glu Thr Glu His Val Leu Tyr Gly Phe
     50                  55                  60
Ser Ser Arg Ala Glu Arg Glu Cys Phe Arg Leu Leu Ile Ser Phe Ser
 65                  70                  75                  80
Gly Ile Gly Pro Lys Thr Gly Leu Ser Ile Leu Asn Met Phe Pro Leu
                85                  90                  95
Gln Glu Leu Cys Ser Ile Ala Arg Leu Glu Asn Val Lys Ala Ile Ala
            100                 105                 110
Ser Val Pro Gly Ile Gly Lys Lys Thr Ala Glu Lys Leu Met Val Asp
        115                 120                 125
```

09611-6250

```
Leu Lys Gln Lys Leu Pro Thr Leu Met Pro Leu Tyr Leu Glu Glu Pro
    130                 135                 140
Val Val Pro Ser Ser Thr Ala Asn Ser Ser Phe Lys Glu Gly Ile Gly
145                 150                 155                 160
Ala Leu Met Asn Leu Gly Phe Ser Arg Leu Ala Ala Asp Arg Met Met
                165                 170                 175
Thr Glu Ala Val Lys Glu Leu Ser Glu Glu Ala Ser Val Ala Glu Leu
            180                 185                 190
Leu Pro Ile Ala Leu Arg Lys Ser
        195                 200
```

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<213>Chlamydia trachomatis
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```
Val Arg Ala Met Ala Gln Glu Lys Glu Arg Gln Gln Gly Glu Tyr Met
  1               5                  10                  15
Glu Gln Thr Leu Ser Ile Ile Lys Pro Asp Ser Val Gly Lys Ala His
            20                  25                  30
Ile Gly Glu Ile Ile Ala Ile Phe Glu Lys Ser Gly Leu Arg Ile Ala
        35                  40                  45
Ala Met Lys Met Val His Leu Ser Val Lys Glu Ala Glu Gly Phe Tyr
    50                  55                  60
Val Val His Lys Glu Arg Pro Phe Phe Gln Glu Leu Val Asp Phe Met
65                  70                  75                  80
Ile Ser Gly Pro Val Val Val Met Val Leu Gln Gly Glu Asn Leu Ser
                85                  90                  95
Pro Val Thr Glu Ser
            100
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<212>PRT
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Arg Glu Thr Phe Phe Pro Arg Thr Gly Arg Leu Tyr Asp Leu Trp Ser
  1               5                  10                  15
Cys Cys Ser Asn Gly Thr Ala Arg Gly Lys Pro Val Ala Arg Asn Arg
            20                  25                  30
Glu Leu Met Gly Ala Thr Asn Pro Lys Glu Ala Ala Glu Gly Ser Ile
        35                  40                  45
Arg Ala Leu Phe Gly Glu Ser Ile Gly Val Asn Ala Val His Gly Ser
    50                  55                  60
Asp Ser Leu Glu Asn Ala Ala Ile Glu Val Ser Tyr Phe Phe Ala Lys
65                  70                  75                  80
Thr Glu Val Val Asn Ser Val Ala
                85
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<210>973
<211>233
<212>PRT
<213>Chlamydia trachomatis
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Met Leu Ile Asn Cys Val Phe Val His Cys Glu Gly Leu Pro Ile Phe
  1               5                  10                  15
Lys Gln Leu Gln Leu Glu Glu Ala Leu Leu Arg Thr Ser Ser Gln Asn
            20                  25                  30
Phe Cys Leu Val Asn Thr His Leu Pro Glu Ala Val Val Leu Gly Ile
        35                  40                  45
Ser Arg Lys Pro Glu Arg Asp Leu His Val Glu His Leu Lys Glu Asp
    50                  55                  60
Gly Ile Pro Ile Ile Arg Arg Tyr Ser Gly Gly Gly Thr Val Phe Leu
65                  70                  75                  80
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09884-6226US

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Asp Ala Asp Ser Leu Met Val Ser Trp Ile Ile Asn Ser Pro Thr Pro
                85                  90                  95
Ser Pro Ser Ser Lys Asp Leu Leu Gln Trp Thr Gln Asp Ile Tyr Ala
            100                 105                 110
Pro Ile Phe Pro Thr Gly Phe Lys Ile Thr Glu Asn Asp Tyr Thr Phe
        115                 120                 125
Leu Asp Lys Lys Ile Gly Gly Asn Ala Gln Tyr Ile Gln Lys Tyr Arg
    130                 135                 140
Trp Val His His Thr Thr Phe Phe Trp Asn Met Asn Pro Lys Lys Leu
145                 150                 155                 160
Ala Arg Tyr Leu Pro Thr Pro Glu Ile Gln Pro Ser Tyr Arg Gln Asn
                165                 170                 175
Arg Ser His Asp Glu Phe Leu Thr Thr Ile Tyr Glu Leu Phe Asp Ser
            180                 185                 190
Arg Glu Asp Phe Leu Ser Gln Leu Lys Gln Ser Ala Ala Ser Lys Met
        195                 200                 205
Val Trp Glu Gln Gly Ser Ile Gln Thr Leu Thr Pro Met Leu Ser Leu
    210                 215                 220
Pro His Arg Lys Ala Thr Gln Ile Leu
225                 230
<210>974
<211>613
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<213>Chlamydia trachomatis
<400>974
Leu Gly Ser Met Trp Thr Phe Pro Val Asp Tyr Asp Val Ile Val Ile
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Gly Ala Gly His Ala Gly Cys Glu Ala Ala Tyr Cys Ala Ala Lys Met
            20                  25                  30
Gly Ala Ser Val Leu Leu Leu Thr Ser Asn Leu Asp Thr Ile Ala Lys
        35                  40                  45
Leu Ser Cys Asn Pro Ala Val Gly Gly Ile Gly Lys Gly His Ile Val
    50                  55                  60
Arg Glu Ile Asp Ala Leu Gly Gly Ile Met Ala Glu Ile Thr Asp Leu
65                  70                  75                  80
Ser Gly Ile Gln Phe Arg Ile Leu Asn Gln Thr Lys Gly Pro Ala Val
                85                  90                  95
Arg Ala Pro Arg Ala Gln Val Asp Lys Gln Leu Tyr His Ile His Met
            100                 105                 110
Lys Arg Leu Leu Glu Gln Val Pro Gly Leu His Ile Met Gln Gly Thr
        115                 120                 125
Ala Glu Ala Leu Leu Asp Asn Gly Glu Lys Val Leu Gly Val Ser Thr
    130                 135                 140
Lys Glu Gly Trp Ala Tyr Leu Gly Lys Thr Val Val Leu Ser Ser Gly
145                 150                 155                 160
Thr Phe Met Arg Gly Leu Ile His Ile Gly Thr Gln Asn Phe Ser Gly
                165                 170                 175
Gly Arg Leu Gly Asp Ala Ala Ser Leu Gly Leu Ser Glu Asp Leu Lys
            180                 185                 190
Arg Leu Gly Phe Pro Leu Gly Arg Leu Lys Thr Gly Thr Pro Ala Arg
        195                 200                 205
Leu Leu Ala Ser Ser Ile Asp Phe Ser Val Met Glu Glu Gln Pro Gly
    210                 215                 220
Asp His Asn Val Cys Phe Val His Arg Asn Glu Met Phe Val Pro Thr
225                 230                 235                 240
Leu Pro Gln Val Ser Cys His Ile Thr His Thr Thr Asp Gln Thr Lys
                245                 250                 255
Asp Leu Ile Thr Lys Asn Leu His Arg Ser Ala Leu Tyr Gly Gly Arg
            260                 265                 270
Ile Glu Gly Val Gly Pro Arg Tyr Cys Pro Ser Ile Glu Asp Lys Ile
        275                 280                 285
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60054-822P050

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Val Lys Phe Ala Asp Lys Asp Arg His His Ile Phe Ile Glu Pro Glu
    290                 295                 300
Gly Leu Asn Thr Gln Glu Val Tyr Val Asn Gly Leu Ser Thr Ser Met
305                 310                 315                 320
Pro Phe Asp Val Gln Tyr Asp Ile Ile Arg Ser Val Ser Gly Leu Glu
                325                 330                 335
Asn Ala Ile Ile Thr Arg Pro Ala Tyr Ala Ile Glu Tyr Asp Tyr Val
            340                 345                 350
His Gly Asn Val Ile Phe Pro Ser Leu Glu Ser Lys Leu Ile Glu Gly
        355                 360                 365
Leu Phe Leu Cys Gly Gln Ile Asn Gly Thr Thr Gly Tyr Glu Glu Ala
    370                 375                 380
Ala Ala Gln Gly Leu Ile Ala Gly Val Asn Ala Val Asn Lys Val Leu
385                 390                 395                 400
Arg Arg Pro Pro Phe Val Pro Ser Arg Gln Glu Ser Tyr Ile Gly Val
                405                 410                 415
Met Leu Asp Asp Leu Thr Thr Gln Val Leu Asp Glu Pro Tyr Arg Met
            420                 425                 430
Phe Thr Ser Arg Ala Glu His Arg Leu Leu Leu Arg Gln Asp Asn Ala
        435                 440                 445
Gly Met Arg Leu Ser His Tyr Gly His Ser Leu Gly Leu Leu Ser Ser
    450                 455                 460
Glu Arg Tyr Ala Met Phe Gln Glu Gln Lys Ala Cys Ile Glu Gln Glu
465                 470                 475                 480
Lys Glu Arg Leu Ser Lys Thr Phe Arg Lys Tyr Gly Asp Thr Val Val
                485                 490                 495
Pro Leu Thr Arg Val Leu Cys Arg Pro Glu Val Ser Tyr Gln Gln Leu
            500                 505                 510
Leu Thr Glu Phe Pro Ala Asp Val Arg Asp Leu Gly Pro Ile Val Gly
        515                 520                 525
Ala Ser Leu Glu Met Glu Ile Lys Tyr Ser Gly Tyr Ile Ser Arg Gln
    530                 535                 540
Gln Thr Leu Ile Arg Ser Met Glu Arg Ser Glu Asn Ile Ser Ile Pro
545                 550                 555                 560
Glu Asp Ile Asp Tyr His Ser Ile Ser Ala Leu Ser Leu Glu Ala Arg
                565                 570                 575
Glu Lys Leu Ser Lys Phe Thr Pro Arg Thr Ile Gly Ser Ala Ala Arg
            580                 585                 590
Ile Ser Gly Ile Ser Val Ala Asp Ile Gln Val Leu Met Val Ser Leu
        595                 600                 605
Lys Lys Asp Ala His
    610
<210>975
<211>472
<212>PRT
<213>Chlamydia trachomatis
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Met Ala Thr Gln Thr Lys Lys Pro Gln Pro Thr Gln Leu Leu Ser Leu
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Pro Asn Ser Lys Glu Ser Glu Met Ile Val Leu Gly Cys Met Leu Thr
             20                  25                  30
Ser Val Asn His Leu Asn Leu Ala Ala Asn Leu Leu Gln Glu Asp Asp
         35                  40                  45
Phe Tyr Phe Leu Glu His Arg Ile Ile Phe Arg Val Leu Gln Asp Ala
     50                  55                  60
Phe Lys Ser Asp Arg Pro Met Asp Pro His Leu Thr Gly Glu Glu Leu
 65                  70                  75                  80
Lys Arg Arg Asp Gln Leu Asn Ile Ile Gly Gly Pro Ser Tyr Leu Ile
                 85                  90                  95
Thr Leu Ser Glu Phe Ala Gly Thr Ser Ala Tyr Ile Glu Glu Tyr Ala
            100                 105                 110
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```
Glu Ile Ile Arg Ser Lys Ser Ile Leu Arg Lys Met Ile Gln Ala Ala
        115                 120                 125
Lys Asp Ile Glu Lys Lys Ala Ala Glu Glu Pro Arg Asp Val Thr Thr
    130                 135                 140
Ala Leu Asp Asp Ala Gln Asn Leu Leu Phe Arg Ile Ser Gln Thr Thr
145                 150                 155                 160
Asn Leu Ala Pro Tyr Val Leu Val Ala Asp Lys Leu Lys Gly Val Ala
                165                 170                 175
Ser Ser Lys Asp Lys Ser Phe Leu Leu Ala Leu Gln Glu Arg Gln Glu
            180                 185                 190
Ala Phe Gln Ala Ser Ala His Asp Ser Ser Ser Pro Met Leu Ser Gly
        195                 200                 205
Phe Pro Thr His Phe Leu Asp Leu Asp Arg Met Ile Ser Gly Phe Ser
    210                 215                 220
Pro Ser Asn Leu Ile Ile Leu Ala Ala Arg Pro Ala Met Gly Lys Thr
225                 230                 235                 240
Ala Leu Ala Leu Asn Ile Val Glu Asn Phe Cys Phe Asp Ser Arg Leu
                245                 250                 255
Pro Val Gly Ile Phe Ser Leu Glu Met Thr Val Asp Gln Leu Ile His
            260                 265                 270
Arg Ile Ile Cys Ser Arg Ser Glu Val Glu Ala Lys Lys Ile Ser Val
        275                 280                 285
Gly Asp Ile Ser Gly Arg Asp Phe Gln Arg Val Val Ser Val Val Arg
    290                 295                 300
Glu Met Glu Glu His Thr Leu Leu Ile Asp Asp Tyr Pro Gly Leu Lys
305                 310                 315                 320
Ile Thr Asp Leu Arg Ala Arg Ala Arg Arg Met Lys Glu Ser Tyr Asp
                325                 330                 335
Ile Gln Phe Leu Val Ile Asp Tyr Leu Gln Leu Ile Ser Ser Ser Gly
            340                 345                 350
Asn Leu Arg Asn Ser Asp Ser Arg Asn Gln Glu Ile Ser Xaa Ile Ser
        355                 360                 365
Arg Met Leu Xaa Asn Leu Ala Arg Glu Leu Asn Ile Pro Ile Leu Cys
    370                 375                 380
Xaa Ser Gln Leu Ser Arg Glu Val Glu Asp Arg Ala Asn His Arg Pro
385                 390                 395                 400
Leu Met Ser Asp Leu Arg Glu Ser Gly Ser Ile Glu Gln Asp Ala Asp
                405                 410                 415
Gln Ile Met Phe Leu Leu Arg Arg Glu Tyr Tyr Asp Pro Asn Asp Lys
            420                 425                 430
Pro Gly Thr Ala Glu Leu Ile Val Ala Lys Asn Arg His Gly Ser Ile
        435                 440                 445
Gly Ser Ile Gln Leu Val Phe Glu Lys Asp Phe Ala Arg Phe Arg Asn
    450                 455                 460
Tyr Ala Gly Cys Glu Phe Pro Gly
465                 470
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Ile Asn Val Met Arg Gln Phe Cys Asn Leu Leu Ser Leu Ser Arg Val
            20                  25                  30
Trp Leu Ala Leu Leu Phe Cys Gln Glu Arg Ile Ile Thr Arg Leu Leu
        35                  40                  45
Val Ile Phe Ala Ala Met Val Ser Asp Val Leu Asp Gly Tyr Leu Ala
    50                  55                  60
Arg Arg Tyr Asn Ala Thr Ser Arg Leu Gly Ser Ile Leu Asp Pro Ala
65                  70                  75                  80
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Thr Asp Lys Ile Phe Phe Leu Ile Cys Val Gly Val Leu Phe Trp Glu
                85                  90                  95
Asn Ser Leu Gly Leu Thr His Leu Ala Leu Ile Phe Ser Arg Asp Ile
            100                 105                 110
Phe Leu Val Phe Phe Gly Phe Tyr Leu Ser Trp Val Arg Gly Trp Lys
        115                 120                 125
Gly Tyr Asp Tyr Arg Ala Leu Ser Phe Gly Lys Phe Phe Thr Val Val
    130                 135                 140
Gln Phe Phe Ile Leu Phe Gly Val Thr Ile Gly Met Glu Ile Pro Val
145                 150                 155                 160
Leu Trp Leu Ala Pro Leu Val Ile Leu Gly Ala Leu Tyr Phe Leu Glu
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Arg Val Leu Asp Tyr Arg Arg His Cys Leu Glu
            180                 185
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Glu Phe Ser Lys Phe Ile Pro Leu Phe Phe Leu Ala Phe Phe Val Gly
             20                  25                  30
Val Asn Tyr Ala Leu Leu Lys Thr Thr Lys Asp Ser Leu Val Leu Val
         35                  40                  45
Gly Ser Arg Ala Gly Ala Glu Val Ile Pro Phe Leu Lys Val Trp Gly
     50                  55                  60
Ile Val Pro Gly Ala Val Ile Val Thr Met Ile Tyr Gly Trp Met Ser
 65                  70                  75                  80
Arg Arg Tyr Ser Arg Gly Thr Val Phe Ile Ser Leu Val Gly Gly Phe
                85                  90                  95
Leu Gly Phe Phe Ala Leu Phe Ala Thr Val Ile Tyr Pro Ile Gly Asp
            100                 105                 110
Ala Leu His Leu Asn Lys Leu Ala Ala Lys Leu Gln Ser Ile Leu Pro
        115                 120                 125
Pro Gly Gly Arg Gly Phe Val Val Met Val Gln Tyr Trp Ser Tyr Ser
    130                 135                 140
Leu Tyr Tyr Val Met Ser Glu Leu Trp Ser Ser Val Val Leu Ser Thr
145                 150                 155                 160
Leu Phe Trp Gly Val Ala Asn His Ile Thr Ser Val Arg Glu Ala Gly
                165                 170                 175
Arg Phe Tyr Ala Leu Ile Asn Thr Gly Leu Asn Leu Ser Ser Val Phe
            180                 185                 190
Ala Gly Glu Val Ser Leu Trp Leu Gly Arg Ser Pro Val Ile Ala Phe
        195                 200                 205
Pro Met Ala Val Asp Pro Trp His Glu Met Leu Leu Asn Ile Thr Leu
    210                 215                 220
Leu Ile Val Leu Ala Gly Gly Val Ile Leu Tyr Leu Tyr Gln Lys Leu
225                 230                 235                 240
Asp Arg Leu Met Asp Glu Thr Ser Met Leu Glu Glu Gly Leu Ala Ala
                245                 250                 255
Glu Met Ser Val Ala Gln Leu Lys Lys Glu Lys Lys Arg Ser Lys Ala
            260                 265                 270
Lys Ala Lys Ser Leu Phe Ala Leu Leu Leu Arg Ser Arg Tyr Leu Leu
        275                 280                 285
Gly Ile Ala Val Val Val Leu Ser Tyr Asn Leu Val Ile His Leu Phe
    290                 295                 300
Glu Val Val Trp Lys Asp Gln Val Cys Arg Ile Tyr Ala Ser Arg Val
305                 310                 315                 320
Glu Phe Asn Ser Tyr Met Ser Arg Ile Thr Thr Leu Thr Gly Ile Val
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Ser Ala Leu Ala Gly Ile Phe Ala Ala Gly Gln Thr Ile Arg Arg Trp
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Gly Trp Thr Val Gly Ala Leu Val Pro Pro Leu Thr Ile Leu Ile Thr
        355                 360                 365
Gly Ala Leu Phe Phe Gly Ala Ile Tyr Ala Val Lys Gly Asp Ala Met
    370                 375                 380
Ile Phe Gly Gly Ile Leu Gly Ile Ser Pro Leu Val Leu Thr Ala Trp
385                 390                 395                 400
Leu Gly Gly Val Gln Asn Val Phe Ser Arg Ala Ile Lys Phe Thr Tyr
                405                 410                 415
Phe Asp Gln Thr Lys Glu Met Ala Phe Ile Pro Leu Glu Asp Asp Glu
            420                 425                 430
Lys Asn Tyr Gly Lys Ala Ala Ile Asp Gly Val Ile Ser Arg Val Gly
        435                 440                 445
Lys Ser Gly Gly Ser Leu Val Tyr Gln Gly Leu Leu Ile Ile Phe Ser
    450                 455                 460
Ser Val Ala Ala Ser Leu Asn Ala Ile Thr Ile Val Leu Leu Leu Ala
465                 470                 475                 480
Leu Gly Ser Trp Ile Phe Val Ile Ala Trp Leu Gly Arg Glu Tyr Thr
                485                 490                 495
Ala Lys Thr Glu Thr Leu Val Arg Val Asn Ala Ser Glu Glu Asp Val
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Leu Gln Glu Glu Arg Glu Ala Ser Ser Leu Val Asp Ala Glu Ser Arg
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Glu Glu Pro Ala Thr Thr Leu
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Lys Asn Phe Phe Arg Phe Leu Leu Lys Gly Phe Leu Ser Ala Cys Gly
             20                  25                  30
Leu Phe Leu Gly Val Ile Gly Ala Ala Gly Phe Ile Phe Val Leu Ser
         35                  40                  45
Ala Ser Val Leu Gly Ala Gly Asp Gly Val Leu Phe Val Asn Phe Pro
     50                  55                  60
Asn Ala Gln Gly Val Val Gln Glu Leu Gly Lys Thr Ala Pro Ile Ile
 65                  70                  75                  80
Ala Val Ile Asp Ile Asn Asp Ala Ile Ile Ala Ser Ser Gly Ala Ala
                 85                  90                  95
Lys Arg Leu Gln Ser Ala Leu Gln Pro Leu Asn Glu Ala Pro Tyr Lys
            100                 105                 110
Gly Arg Val Lys Gly Ile Leu Val Lys Ile Asp Cys Pro Gly Gly Glu
        115                 120                 125
Val Phe Glu Ile Asp Arg Met Cys Ala Thr Leu Ser Phe Trp Lys Lys
    130                 135                 140
Gln Trp Gly Ile Pro Val His Val Phe Val Ser Gly Leu Cys Ala Ser
145                 150                 155                 160
Gly Gly Tyr Tyr Val Ala Cys Ile Ala Asp Lys Ile Gly Thr Thr Ser
                165                 170                 175
Ser Ser Leu Ile Gly Ser Ile Gly Val Arg Ser Gly Pro Tyr Phe Asn
            180                 185                 190
Val Lys Glu Gly Leu Gln Arg His Gly Val Glu Thr Ala Ile Leu Thr
        195                 200                 205
Ala Gly Asp Asp Lys Ala Pro Leu Asn Pro Phe Ser Ser Trp Thr Glu
    210                 215                 220
Glu Glu Tyr Ala Glu Arg Gln Gly Ile Val Asp Ala Phe Tyr Glu Gln
225                 230                 235                 240
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Phe Val Asp His Val Val Lys Tyr Arg Ser Lys Leu Ser Lys Glu Lys
245 250 255
Leu Thr Lys Val Leu Gly Ala Arg Val Phe Ile Ala Lys Gln Ala Leu
260 265 270
Glu Glu Gly Leu Val Asp Ala Ile Asn Gln Thr Gln Glu Gln Ala Leu
275 280 285
Glu Glu Leu Ala Glu Ala Cys Gly Ile Lys Asp Asn Tyr Arg Val Ile
290 295 300
Gly Leu Gly Ser Gly His Phe Leu Lys Arg Phe Ser Ser Tyr Leu Ser
305 310 315 320
Asn Ser Pro Leu Val Thr Gly Lys Leu Gln Val Thr Ala Leu Pro Asp
325 330 335
Gln Gln Gln Lys Ser Leu Trp Tyr Met Gly
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<400>979
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Arg Ala Tyr Phe Ala Leu Pro Glu Met Arg Gly Pro Asn Gly Glu Ser
20 25 30
Thr Gln Ala Val Phe Gly Phe Ile Arg Ser Leu Asp Lys Leu Ile Lys
35 40 45
Asp Leu Ser Pro Glu Tyr Val Val Ala Val Phe Asp Gly Pro Asn Asn
50 55 60
Lys Gln Ser Arg Gln Glu Leu Tyr Ala Asp Tyr Lys Ser Asn Arg Asp
65 70 75 80
Arg Gln Leu Glu Asp Leu Pro Glu Gln Ile Arg Leu Val Lys Gln Tyr
85 90 95
Cys Glu Leu Leu Gly Ile Ser Cys Leu Glu Glu Lys Gly Val Glu Ala
100 105 110
Asp Asp Val Ile Ala Ser Ile Thr Lys Lys Ala Val Ala Asp Gly Phe
115 120 125
Glu Val Cys Ile Cys Thr Ala Asp Lys Asp Leu Leu Gln Leu Val Ser
130 135 140
Ser Arg Val Ser Val Phe Asn Pro Trp Lys Glu Gln Glu Ile Gln Tyr
145 150 155 160
Asn Glu Val Leu Leu Gln Phe Gly Val Pro Pro Glu Gln Ile Ala Asp
165 170 175
Tyr Leu Ala Leu Val Gly Asp Ser Ser Asp Asn Ile Pro Gly Val Ser
180 185 190
Gly Cys Gly Pro Lys Lys Ala Gln Ala Leu Leu Lys Glu Phe Gln Ser
195 200 205
Val Glu Glu Leu Val Ala Asn Thr Glu Arg Leu Ser Gly Lys Thr Lys
210 215 220
Gln Met Ile Glu Asp Gln Lys Glu Thr Leu Leu Leu Ser Lys Arg Leu
225 230 235 240
Ala Thr Leu His Met Asp Leu Ala Phe Pro Leu Thr Thr Glu Glu Phe
245 250 255
Ala Phe Ser Pro Gln Ala Ile Asp Ser Ala Gln Leu Asn Thr Phe Tyr
260 265 270
Leu Gln His Gly Phe Lys Ala Leu Val Lys His Ser Glu Thr Ala Thr
275 280 285
Ser Ser Ile Ala Val Gln Thr Val Thr Asp Pro Val Thr Leu Lys Thr
290 295 300
Val Leu Glu Gln Leu Lys Gly Gly Glu Val Gly Tyr Cys Ala Ala Tyr
305 310 315 320
Thr Gly Glu His Leu Pro Ser Leu Gln Leu His Gly Val Ala Leu Ala
325 330 335

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Gly Ala Asn Gln Val Phe Tyr Ile Glu Val Ser Gly Val Gln Glu Ile
340 345 350
Ala Leu Leu Lys Asp Phe Phe Ala Asp Lys Ala Thr Gln Phe Phe Gly
355 360 365
Tyr Arg Ser Lys Arg Asp Asn His Ala Leu Arg Asn Ser Gly Ile Asp
370 375 380
Val His Val Thr Ala Asp Leu Val Leu Ala Glu His Leu Val Ser Gly
385 390 395 400
Gly Ala Lys Ile Ser Phe Gln Thr Leu Leu Met Glu Ser Gly His Ile
405 410 415
Gln Glu Ala Val Phe Phe Ser Lys Glu Trp Gly Ala Gly Ser Leu Pro
420 425 430
Val Gln Ser Leu Pro Arg Asp Pro Ala Gln Tyr Phe Gly Met Phe Ala
435 440 445
Ser Lys Leu Leu Ala Ile Lys Asn Tyr Leu Phe Val Lys Leu Glu Glu
450 455 460
Lys Gly Leu Lys Asp Ile Phe Glu Thr Val Glu Gln Pro Leu Glu Ala
465 470 475 480
Val Leu Phe Ala Met Glu Cys Val Gly Met Pro Leu Asp Ser Gln Gly
485 490 495
Leu Ala Val Leu Asp Arg Asp Leu Thr Lys Glu Leu Glu Glu Cys Ser
500 505 510
Gln Glu Ile Tyr Asp Leu Thr Gly Cys Glu Phe Asn Ile Lys Ser Pro
515 520 525
Lys Gln Leu Ser Asp Ile Leu Tyr Gln Arg Leu Gly Ile Glu Pro Val
530 535 540
Asp Lys Ala Lys Ser Thr Lys Ala Glu Val Leu Glu Ala Leu Glu Asp
545 550 555 560
Arg His Glu Ile Ile Pro Lys Ile Leu Met Phe Arg Ala Thr Glu Lys
565 570 575
Met Leu Ser Thr Tyr Val Arg Ala Leu Pro Lys Gln Ile Asn Ala Gly
580 585 590
Thr Gln Arg Ile His Pro Thr Phe Asn Gln Val Gly Thr Val Thr Gly
595 600 605
Arg Leu Ser Cys Gln Asp Pro Asn Leu Gln Asn Ile Pro Val Arg Ser
610 615 620
Glu Arg Gly Arg Ser Leu Arg Glu Ala Phe Arg Val Lys Lys Asp Asn
625 630 635 640
Asp Tyr Phe Leu Ala Ala Asp Tyr Ser Gln Ile Glu Leu Arg Phe Leu
645 650 655
Ala His Leu Ser Gln Asp Glu Thr Leu Lys Arg Ala Phe Asn Ser Gly
660 665 670
Glu Asp Ile His Ala Phe Thr Ala Ser Gln Val Phe Asn Val Pro Leu
675 680 685
Glu Gln Val Thr Lys Gln Glu Arg Tyr Gln Ala Lys Ala Val Asn Phe
690 695 700
Gly Leu Val Tyr Gly Gln Gln Ala Tyr Gly Leu Ser Lys Ile Leu Lys
705 710 715 720
Ile Ser Val Ser Glu Ala Gln Gly Leu Met Asp Ala Tyr Phe Ala Arg
725 730 735
Tyr Pro Leu Ala Ala Glu Phe Ile Thr Gln Thr Ile Glu Gln Ala Ser
740 745 750
Lys Asn Gln Lys Val Thr Thr Met Leu Gly Arg Glu Arg Ile Leu Ser
755 760 765
Asp Trp Glu Ser Ser Pro Gly Ala Arg Ala Ala Ser Gly Arg Leu Ala
770 775 780
Val Asn Thr Arg Ile Gln Gly Ser Ala Ala Glu Leu Ile Lys Leu Ala
785 790 795 800
Met Leu Asn Ile Ser Asp Glu Met Arg Ser Arg Gly Leu Lys Ser Arg
805 810 815
Leu Leu Leu Gln Ile His Asp Glu Leu Leu Phe Glu Val Pro Ala Glu

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820 825 830
Glu Leu Glu Glu Met Arg Ser Leu Val Gln Glu Lys Met Glu Ser Ala
835 840 845
Met Glu Leu Ser Val Pro Leu Val Val Asn Val Leu Ile Gly Lys Asn
850 855 860
Trp Ala Glu Cys
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20 25 30
Lys Thr Glu Ala Cys Gln Val Phe Glu Asp Leu Gly Ala Tyr Val Ile
35 40 45
Ser Ala Asp Lys Val Ser His Ser Phe Leu Val Pro Tyr Thr Ser Val
50 55 60
Gly Gln Arg Ile Ile Asp Leu Leu Gly Pro Glu Ile Ile Ile Glu Asn
65 70 75 80
Thr Leu Ser Arg Lys Ala Ile Ala Glu Lys Val Phe Gly Asn Arg Asp
85 90 95
Leu Leu Leu Ser Leu Glu Glu Ile Leu His Pro Glu Val Cys Arg Phe
100 105 110
Val Glu Glu Lys Tyr Ala His Val Val Gln Glu Gln Lys Tyr Pro Leu
115 120 125
Phe Ile Val Glu Phe Pro Leu Leu Tyr Glu Ile Gln Tyr Ala Asp Trp
130 135 140
Phe Asp Gln Val Ile Leu Ile Ser Ala Asp Thr Gly Ile Arg Lys Glu
145 150 155 160
Arg Phe Leu Lys Lys Thr Gly Gly Ser Asp Thr Ser Phe Asp Leu Arg
165 170 175
Cys Ala Arg Phe Ser Ser Leu Glu Glu Lys Ile Leu Arg Ala Asp Val
180 185 190
Val Ile Glu Asn Asn Gly Thr Lys Glu Glu Phe Arg Arg Lys Val Lys
195 200 205
Gln Cys Phe Lys Ala Leu Lys Gly Thr Ile
210 215
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20 25 30
Ser Ala Val Ala Thr Glu Glu Lys Glu Thr Ser Gln Pro Val Ala Val
35 40 45
Thr Lys Ile Ala Lys Leu Gln Arg Met Gly Ile Asn Glu Leu Asn Val
50 55 60
Leu Ala Arg Gln Tyr Gly Val Lys Asn Val Gly Ser Leu Thr Lys Ser
65 70 75 80
Gln Val Val Phe Glu Ile Val Lys Ala Lys Ser Glu Arg Pro Asp Glu
85 90 95
Phe Leu Ile Gly Glu Gly Val Leu Glu Val Leu Pro Asp Gly Phe Gly
100 105 110
Phe Leu Arg Ser Pro Thr Tyr Asn Tyr Leu Pro Ser Ala Glu Asp Ile
115 120 125

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Tyr Val Ser Pro Ala Gln Ile Arg Arg Phe Asp Leu Lys Lys Gly Asp
    130                 135                 140
Thr Ile Val Gly Thr Ile Arg Ser Pro Lys Glu Lys Glu Lys Tyr Phe
145                 150                 155                 160
Ala Leu Leu Lys Val Asp Lys Ile Asn Gly Ser Thr Pro Asp Lys Ala
                165                 170                 175
Lys Glu Arg Val Leu Phe Glu Asn Leu Thr Pro Leu His Pro Asn Glu
            180                 185                 190
Arg Leu Ile Met Glu Ile Gly Lys Glu Asn Leu Ala Glu Arg Val Leu
        195                 200                 205
Asp Leu Thr Ala Pro Ile Gly Lys Gly Gln Arg Gly Leu Ile Val Ala
    210                 215                 220
Pro Pro Arg Ser Gly Lys Thr Val Ile Leu Gln Ser Ile Ala His Ala
225                 230                 235                 240
Ile Ala Val Asn Asn Pro Asp Ala Glu Leu Ile Val Leu Leu Ile Asp
                245                 250                 255
Glu Arg Pro Glu Glu Val Thr Asp Met Ile Arg Gln Val Arg Gly Glu
            260                 265                 270
Val Val Ala Ser Thr Phe Asp Glu Gln Pro Asp Arg His Ile Gln Val
        275                 280                 285
Thr Glu Met Val Ile Glu Lys Ala Arg Arg Leu Val Glu His Gly Lys
    290                 295                 300
Asp Val Val Ile Leu Leu Asp Ser Ile Thr Arg Leu Ala Arg Ala Tyr
305                 310                 315                 320
Asn Thr Val Gln Pro His Ser Gly Lys Ile Leu Thr Gly Gly Val Asp
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            20                  25                  30
Thr Gly Ser Arg Met Asp Glu Val Ile Phe Glu Glu Phe Lys Gly Thr
        35                  40                  45
Gly Asn Met Glu Leu Val Leu Asp Arg His Leu Ser Asp Arg Arg Ile
    50                  55                  60
Tyr Pro Ala Ile Asp Leu Ile Lys Ser Gly Thr Arg Lys Glu Glu Leu
65                  70                  75                  80
Leu Tyr His Pro Gly Glu Leu Glu Lys Val Arg Leu Phe Arg Gln Ala
                85                  90                  95
Ile Ala Gly Leu Thr Ala Ile Asp Ala Met His Leu Leu Leu Gly Arg
            100                 105                 110
Leu Lys Lys Thr Asn Ser Asn Thr Glu Phe Leu Leu Ser Leu Lys Asp
        115                 120                 125
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<213>Chlamydia trachomatis

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Glu Glu Gln Ile Asn Arg Lys Arg Ser His Phe Tyr Arg Asp Asn Val
            20                  25                  30
Gly Val Ile Val Leu Cys Gly Gly Glu Gly Lys Arg Leu Ser Pro Leu
        35                  40                  45
Thr Cys Trp Arg Cys Lys Pro Thr Val Ser Phe Gly Gly Arg Tyr Lys
    50                  55                  60
Leu Ile Asp Val Pro Ile Ser His Ala Phe Ala Ser Glu Phe Ser Lys
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 65                  70                  75                  80
Ile Phe Val Ile Gly Gln Tyr Leu Thr Tyr Thr Leu Gln Gln His Leu
                 85                  90                  95
Phe Lys Thr Tyr Phe Tyr His Gly Val Met Gln Asp Gln Ile His Leu
            100                 105                 110
Leu Val Pro Glu Arg Arg Asp Gly Ser Gln Val Trp Tyr Gln Gly Thr
        115                 120                 125
Ala Asp Ala Ile Arg Gln Asn Leu Leu Tyr Leu Gln Asp Ser Arg Val
    130                 135                 140
Glu Tyr Phe Leu Ile Leu Ser Gly Asp Gln Leu Tyr Asn Met Asp Phe
145                 150                 155                 160
Arg Ser Ile Val Asp Tyr Ala Ile Asp Ala Gln Ala Asp Met Val Ile
                165                 170                 175
Ala Ser Gln Pro Val Ser Asp Lys Asp Val Ser Arg Phe Gly Val Leu
            180                 185                 190
Lys Val Asp Asp Glu Ser Lys Leu Ile Asp Phe Tyr Glu Lys Pro Gln
        195                 200                 205
Ser Glu Glu Ile Leu Lys His Phe Arg Leu Ser Asn Thr Ala Met Lys
    210                 215                 220
Lys Phe Gly Leu Asp Pro Gln His Gly Asn Phe Leu Gly Ser Met Gly
225                 230                 235                 240
Ile Tyr Leu Phe Arg Lys Asp Cys Leu Phe Gln Leu Leu Leu Glu Glu
                245                 250                 255
Thr Gly Asp Asp Phe Gly Lys Glu Leu Ile His Arg Gln Met His Arg
            260                 265                 270
Gly Lys Thr Val Ala Tyr Leu Tyr Asp Gly Tyr Trp Thr Asp Ile Gly
        275                 280                 285
Thr Ile Glu Ser Tyr Tyr Glu Ala Asn Met Ala Leu Thr Gln Arg Pro
    290                 295                 300
Ser His Asn Ile Arg Gly Phe Asn Cys Tyr Asp Asp Gly Gly Ile Ile
305                 310                 315                 320
Tyr Ser Lys Asn Asn His Leu Pro Gly Ala Ile Ile Ser Asp Ser Arg
                325                 330                 335
Ile Ser Ser Ser Leu Leu Cys Glu Gly Ala Met Ile Glu Ser Gly Gln
            340                 345                 350
Val Ser Asn Ser Val Val Gly Val Arg Gly Val Ile Gly Gln Gly Ser
        355                 360                 365
Val Phe Asp Arg Ser Ile Met Met Gly Ser Asp Ser Tyr Gly Ser Glu
    370                 375                 380
Ser Phe Pro Leu Gly Ile Gly Lys Asn Cys Glu Ile His Lys Thr Ile
385                 390                 395                 400
Ile Asp Glu Asn Cys Cys Ile Gly Asn Gly Val Arg Leu Gln Asn Leu
                405                 410                 415
Gln Gly His Lys Asp Tyr Asp Ser Pro Asp Gly Lys Leu Val Val Arg
            420                 425                 430
Asp Gly Ile Ile Ile Val Pro Arg Gly Thr Gln Ile Pro Asp Asn Tyr
        435                 440                 445
Val Phe
    450
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<213>Chlamydia trachomatis
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Leu His Leu Ser Leu Gly Val Pro Glu Lys Thr Met Glu Val Phe Gly
             20                  25                  30
Glu Pro Trp Val Gly Tyr His Gln Lys Ile Glu Lys His Trp Arg Asp
         35                  40                  45
Ile Val Ser Ser Asp Asp Ile Val Cys Leu Pro Gly Asp Ile Ser Trp
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     50                  55                  60
Ala Met Arg Leu Glu Glu Ala Gln Val Asp Phe Arg Phe Leu Gly Ala
 65                  70                  75                  80
Leu Pro Gly Ile Lys Tyr Met Ile Arg Gly Asn His Asp Tyr Trp Ser
                85                  90                  95
Ser Ala Ser Ser Ala Lys Leu Ala Asn Val Leu Pro Glu Thr Leu His
            100                 105                 110
Tyr Leu Ser Lys Gly Tyr Val Leu Leu Asn Ala His Gln Ala Ile Val
        115                 120                 125
Gly Val Arg Leu Trp Asp Ser Ser Asp Ile Cys Leu His Trp Glu Thr
    130                 135                 140
Gln His Asp Gly Pro Gln Arg Val Leu Thr Glu Gln Asp Asp Lys Ile
145                 150                 155                 160
Phe Leu Arg Glu Tyr Gly Arg Leu Glu Arg Ala Leu Lys Glu Leu Pro
                165                 170                 175
Ala Ser Val Glu Asp Val Leu Val Met Thr His Tyr Pro Pro Val Ser
            180                 185                 190
Asn Asp Gly Thr Pro Gly Arg Val Ser Asn Leu Leu Glu Met Asp Gly
        195                 200                 205
Arg Val Ser Arg Cys Leu Phe Gly His Leu His Lys Val Pro Arg Pro
    210                 215                 220
Phe Pro Gly Phe Gly Asn Ile Arg Gly Ile Glu Tyr Thr Leu Val Ala
225                 230                 235                 240
Ala Asp Tyr Val Asp Phe Ile Pro Gln Val Val Ser
                245                 250
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Ser Asn Pro Ser Val Arg Pro Thr Cys Gly Val Val Lys Glu Ala Val
             20                  25                  30
Phe Asn Ile Cys Ala Asn His Ile Val Gly Ala Arg Phe Leu Asp Leu
         35                  40                  45
Phe Ala Gly Ser Gly Ser Met Gly Phe Glu Ala Ile Ser Arg Gly Ala
     50                  55                  60
Glu Ser Ala Thr Phe Val Asp Ser Ser Val Glu Ala Val Arg Leu Ile
 65                  70                  75                  80
Arg Ala Asn Leu Ala Leu Leu Asp Ser Asn Leu Pro Val His Ile Leu
                85                  90                  95
Lys Gln Asp Val Arg Ser Ala Phe Tyr Ala
            100                 105
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Ile Arg Gly Ser Ser Leu Ile Ser Glu Val Arg Val Lys Phe Lys Tyr
             20                  25                  30
Leu Arg Pro Leu Ser Phe Leu Val Leu Val Ile Val Ala Phe Cys Tyr
         35                  40                  45
Gly Cys Ser Arg Glu Lys Gln Glu Val Leu Val Gly Arg Asp Ala Thr
     50                  55                  60
Trp Phe Pro Gln Gln Phe Gly Ile Tyr Thr Ser Gly Ile Asn Ala Phe
 65                  70                  75                  80
Val Asn Asp Leu Val Ser Glu Ile Asn Tyr Lys Glu Gly Leu Asn Ile
                85                  90                  95
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```
Ser Ile Val Asn Gln Asp Trp Val His Leu Phe Glu Asn Leu Asp Asp
            100                 105                 110
Lys Lys Thr Ser Gly Ala Phe Thr Ser Ala Ser Pro Ser Ile Glu Met
        115                 120                 125
Leu Ala Arg Tyr Gln Phe Ser Asp Pro Val Leu Leu Thr Gly Pro Val
    130                 135                 140
Leu Val Val Leu Glu Asn Ser Pro Tyr His Ser Leu Gln Asp Leu Glu
145                 150                 155                 160
Gly Lys Leu Ile Gly Val Tyr Lys Phe Asp Ser Ser Val Leu Ile Ala
                165                 170                 175
Gln Asn Val Pro Asn Ala Val Ile Asp Ser Tyr Gln His Ile Pro Val
            180                 185                 190
Ala Leu Glu Ala Leu Ser Thr Gln Arg Tyr Asp Ala Leu Leu Val Pro
        195                 200                 205
Val Ile Glu Ala Thr Ala Leu Val Glu Thr Ala Tyr Lys Gly Arg Leu
    210                 215                 220
Arg Ile Ala Ser Glu Pro Leu Asn Glu Glu Gly Leu Arg Leu Val Val
225                 230                 235                 240
Leu Arg Gly Gly Gly Ser Asp Ser Leu Leu Glu Gly Phe Asn Ala Gly
                245                 250                 255
Leu Ala Lys Ile Arg Arg Ser Gly Arg Tyr Lys Ala Ile Lys Met Gln
            260                 265                 270
Ser Arg Leu Pro
        275
<210>987
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<213>Chlamydia trachomatis
<400>987
Asn Lys Glu Phe Lys Glu Thr Val Val Thr Tyr Leu Leu Ala Asn Phe
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Gly Gly Pro Arg Thr Ser Gln Glu Ile Val Ser Phe Leu Gln Ala Leu
             20                  25                  30
Leu Thr Asp Arg Asp Val Thr Gly Gly Met Ile Pro Ser Val Leu His
         35                  40                  45
Arg Pro Leu Phe Ser Tyr Ile Ala Lys Arg Arg Ala Pro His Val Ala
     50                  55                  60
Arg Gln Tyr Ala Tyr Leu Gly Gly Gly Ser Pro Ile Phe Gln Asp Thr
 65                  70                  75                  80
Glu Arg Leu Ala Gln Asn Leu Ser Gln Glu Leu Gln Ala Ser Val Ile
                 85                  90                  95
Pro Phe His Thr Tyr Leu Pro Glu Thr His Arg Glu Thr Leu Gln Ala
            100                 105                 110
Leu Gln Glu Ser Gln Gly Ser Ile Val Gly Ile Pro Leu Phe Pro His
        115                 120                 125
Tyr Thr Phe Ala Val Thr Gly Ser Ile Ile Arg Phe Phe Leu Gln His
    130                 135                 140
Leu Pro Glu Lys Pro Ile Ser Trp Ile Thr Gln Phe Gly Val His Pro
145                 150                 155                 160
Gln Phe Val Ser Cys Met Gln Gln His Ile Arg Asp Cys Leu Ala Ala
                165                 170                 175
Gln Xaa Ile Ala Val Glu Asp Cys Tyr Phe Leu Phe Ser Val His Gly
            180                 185                 190
Leu Pro Gln Arg His Ile Arg Leu Gly Asp Pro Tyr Ala Gln Gln Cys
        195                 200                 205
Gln Ala Ser Phe Glu Ala Leu Arg Arg
    210                 215
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20 25 30
Lys Trp Leu Asp Pro Ser Thr Gln Glu Val Cys Gln Ser Leu Arg Thr
35 40 45
Lys Lys Arg Tyr Ile Val Ile Val Pro Phe Gly Phe Val Ser Asp His
50 55 60
Ile Glu Thr Leu Tyr Glu Ile Asp His Leu Tyr Val Pro Ile Leu Leu
65 70 75 80
Gln Lys Glu Tyr Arg Val Val Arg Ile Pro Ala Ile Asn Ala Ser Ser
85 90 95
Arg Trp Val Ser Ser Leu Ala Ala Ile Val Arg Ser Ser Pro Gln Glu
100 105 110
Thr Ser Leu Glu Pro Leu Leu Met Pro
115 120
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Glu Cys Gly Ile Ser Met Lys Ser Arg Asn Ala Gln Ser Ile Leu Glu
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Ser Leu Cys Lys Lys Thr His Arg Leu Leu Leu Arg Tyr Leu Leu Lys
20 25 30
Gln Thr Leu Leu Val Ala Leu Gly Met Thr Leu Met Val Ala Glu Leu
35 40 45
Gly Ile Phe Leu Tyr Phe Phe Leu Phe Ser Gly Lys Thr Leu Leu Pro
50 55 60
Ala Phe Cys Leu Ala Cys Phe Val Leu Thr Ile Phe Ile Cys Leu Val
65 70 75 80
Ile Arg Leu Tyr Ile Leu Ser Lys Lys Thr Glu Phe Phe Asp Lys Leu
85 90 95
Leu Ala Asp Phe Val His Gln Ala Gln Val Ile Phe Lys Lys Lys Asn
100 105 110
Met Met Glu Glu His Pro Glu Ile Ala Ala Ala Val Thr Gln Leu Ser
115 120 125
Leu Val Met Gln Asn Gln Glu Tyr Phe Val Phe Cys Asn Leu Leu Lys
130 135 140
Ile Val Pro Pro Tyr Asp Ser Ile Lys Lys Phe Ser Cys Phe Cys Phe
145 150 155 160
Trp Lys Asp Tyr Phe Ser Phe Arg Glu Met Leu Leu Gln Lys Ala Ile
165 170 175
Asp Leu Tyr Leu Leu Val Val Gln Ala Ile Pro Thr Asp Leu Gly Ala
180 185 190
His Val Ser Leu Ala Asp Ala Tyr Val Ser Leu Ser Gly Leu Tyr Ala
195 200 205
Asp Pro Arg Lys Tyr Thr Glu Phe Asp Thr Lys Tyr Trp Val Pro Pro
210 215 220
Gly Arg Tyr Gly Glu Asp Ile Gln Glu Lys Phe Phe Ala Thr Ala His
225 230 235 240
Arg Ala Thr Glu Glu Phe Lys Ile Leu Asn Glu Tyr Ala Pro Gly Asn
245 250 255
Val Trp Val His Thr Gln Leu Ala Tyr Ser Tyr His Asp Leu Gln Met
260 265 270
Pro Lys Lys Glu Ile Arg Glu Tyr Glu Ile Val Leu Lys Leu Lys Pro
275 280 285
His Asp Ala Asn Thr Ile Met Lys Leu Gly Ile Leu Tyr Phe Gln Gln
290 295 300
Gly Met Asn Ala Lys Gly Leu Gln Val Tyr Glu Gln Leu Arg Lys Val

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305 310 315 320
Asp Leu Lys Lys Ser Lys Lys Leu Ile Lys Phe Tyr Gly Val Val Ala
325 330 335
Lys

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<400>990
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Arg Lys Lys Ile Ser Ser Tyr Ser Val Val Leu Phe Cys Leu Val Val
20 25 30
Leu Ser Ile Phe Leu Ser Gly Lys Ile Val Val Asn Val Lys Thr Tyr
35 40 45
Arg Val Glu Arg Gln Asn Ser Leu Val Leu Leu Ser Arg Ser Val Glu
50 55 60
Ala Ala Tyr Ser Arg Gly Ile Phe Pro Pro Glu Thr Ala Met Pro Met
65 70 75 80
Leu Glu Gln Ala Tyr Arg Arg Gly Gly Lys Glu Ala Val Ser Tyr Ala
85 90 95
Gly Phe Leu Ala Ser Cys Phe His Ile His Asn Asp Pro Leu Arg Gly
100 105 110
Ala Tyr Tyr Ser Gly Leu Ala Tyr Gln His Gly Thr His Leu Gln Leu
115 120 125
Pro Ser Pro Gln His Ile Leu Leu Lys Glu Ile Ala Asp Ala His Ala
130 135 140
Thr Lys Gln Tyr Gln Glu Val Leu Asp Lys Ser Arg Glu Leu Leu Ser
145 150 155 160
Ser Ile Ser Ser Ser Lys Asp Phe Pro Met Leu Arg Phe Leu Thr Leu
165 170 175
Leu Arg Met Ile Glu Val Lys Glu Ser Leu Asn Gln Asp Phe Ser Leu
180 185 190
Glu Leu Thr Glu Leu Lys Ala Leu Pro Gly Phe Glu Asp Tyr Glu Gln
195 200 205
Leu Tyr Lys Asp Gly Val Trp Thr Ile Ser Lys Arg Tyr Ser Ser Leu
210 215 220
Arg Ala Leu Tyr
225
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<213>Chlamydia trachomatis
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Ser Met Leu Arg Val Leu Ala Tyr Arg Gln Val Ser Phe Ser Lys Phe
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Pro His Leu Phe Lys Ser Phe Val Ser Leu Leu Ser Ser Leu Lys Gln
20 25 30
His Tyr Ser Phe Met Leu Pro Gly Asp Pro Leu Pro Lys Lys Lys Ala
35 40 45
Leu Met Leu Thr Phe Asp His Ala Ser Val Asp Phe Tyr Thr His Val
50 55 60
Phe Pro Leu Leu Gln Asn Leu Gln Ile Pro Ala Val Ile Gly Val Ala
65 70 75 80
Trp Arg Tyr Val Ala Asp Leu Glu Gly Glu Asp Leu Pro Ile Asp Val
85 90 95
Arg Ile Ala Pro Ser Asp Phe Leu Ala Phe Gln Asp Glu Ile Phe Ser
100 105 110
Tyr His Gln Pro Phe Cys Ser Val Arg Glu Leu Cys His Met Ala Ala
115 120 125

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Ser Pro Leu Val Arg Phe Ala Ser Ser Gly Phe Ala Ile Arg Asn Leu
    130                 135                 140
Lys Tyr Ala Pro Pro Tyr Leu Asp Thr Glu Ile Leu Leu Ser Lys Ile
145                 150                 155                 160
Leu Leu Glu Asn Ala Ile Gln Ser Pro Val Glu Ser Phe Phe Phe Pro
                165                 170                 175
Leu Gly Lys Ser Asp Val Val Ser Gln His Phe Val Gln Glu Thr Tyr
            180                 185                 190
Arg Tyr Ser Phe Val Leu Gly Asn Thr Ala Ser Phe Ser Tyr Pro Thr
        195                 200                 205
Gln Ser Leu His Gly Ile Pro Arg Ile Asp Met Pro Leu Asp Ser Gln
    210                 215                 220
Arg Val Pro Ser Leu Tyr Gln Leu Ser Tyr Arg His Leu Lys Gln Phe
225                 230                 235                 240
Leu Val Leu Arg

<210>992
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<212>PRT
<213>Chlamydia trachomatis
<400>992
Arg Arg Gln Arg Met Ile Asp Lys Ile Ile Arg Thr Val Leu Val Leu
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Ser Leu Phe Leu Leu Tyr Trp Ser Ser Asp Leu Leu Glu Lys Asp Val
             20                  25                  30
Lys Ser Ile Lys Arg Glu Leu Lys Ala Leu His Glu Asp Val Leu Glu
         35                  40                  45
Leu Val Arg Ile Ser His Gln Gln Lys Asn Trp Val Gln Ser Ile Asp
     50                  55                  60
Phe Ser Val Ser Pro Glu Ile Ser Val Leu Lys Asp Cys Gly Asp Pro
 65                  70                  75                  80
Ala Phe Pro Asn Leu Leu Cys Glu Asp Pro Tyr Val Glu Lys Val Val
                85                  90                  95
Pro Ser Leu Leu Lys Glu Gly Phe Val Pro Lys Gly Ile Leu Arg Thr
            100                 105                 110
Ala Gln Val Gly Arg Pro Asp Asn Leu Ser Pro Phe Asn Gly Phe Val
        115                 120                 125
Asn Ile Val Arg Phe Tyr Glu Leu Cys Val Pro Asn Leu Ala Val Glu
    130                 135                 140
His Val Gly Lys Tyr Glu Glu Phe Ala Pro Ser Leu Ala Leu Lys Ile
145                 150                 155                 160
Glu Glu His Tyr Val Glu Asp Gly Ser Gly Asp Lys Glu Phe His Ile
                165                 170                 175
Tyr Leu Arg Pro Asn Met Phe Trp Glu Pro Ile Asp Pro Thr Leu Phe
            180                 185                 190
Pro Lys Asn Ile Thr Leu Ala Asp Thr Phe Leu Arg Pro His Pro Val
        195                 200                 205
Thr Ala His Asp Val Lys Phe Tyr Tyr Asp Val Val Met Asn Pro Tyr
    210                 215                 220
Val Ala Glu Met Arg Ala Val Ala Met Arg Ser Tyr Phe Glu Asp Met
225                 230                 235                 240
Val Ser Val Arg Val Glu Asn Asp Leu Lys Leu Ile Val Arg Trp Arg
                245                 250                 255
Ala His Thr Val Arg Asn Glu Gln Gly Glu Glu Glu Lys Lys Val Leu
            260                 265                 270
Tyr Ser Ala Phe Ala Asn Thr Leu Ala Leu Gln Pro Leu Pro Cys Phe
        275                 280                 285
Val Tyr Gln Tyr Phe Ala Asn Gly Glu Lys Ile Val Pro Glu Asp Ser
    290                 295                 300
Asp Pro Asp Thr Tyr Arg Lys Asp Ser Val Trp Ala Gln Asn Phe Ser
305                 310                 315                 320
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Ser His Trp Ala Tyr Asn Tyr Ile Val Ser Cys Gly Ala Phe Arg Phe
                325                 330                 335
Ala Gly Met Asp Asp Glu Lys Ile Thr Leu Val Arg Asn Pro Asn Tyr
            340                 345                 350
His Asn Pro Phe Ala Ala Leu Val Glu Lys Arg Tyr Ile Tyr Met Lys
        355                 360                 365
Asp Ser Thr Asp Ser Leu Phe Gln Asp Phe Lys Ala Gly Lys Val Asp
    370                 375                 380
Ile Ala Tyr Phe Pro Pro Asn His Val Asp Asn Leu Ala Ser Phe Met
385                 390                 395                 400
Gln Thr Ser Ala Tyr Lys Glu Gln Ala Ala Arg Gly Glu Ala Ile Leu
                405                 410                 415
Glu Lys Asn Ser Ser Asp Arg Ser Tyr Ser Tyr Ile Gly Trp Asn Cys
            420                 425                 430
Leu Ser Leu Phe Phe Asn Asn Arg Ser Val Arg Gln Ala Met Asn Met
        435                 440                 445
Leu Ile Asp Arg Asp Arg Ile Ile Glu Gln Cys Leu Asp Gly Arg Gly
    450                 455                 460
Val Ser Val Ser Gly Pro Phe Ser Leu Cys Ser Pro Ser Tyr Asn Arg
465                 470                 475                 480
Asp Val Glu Gly Trp Gln Tyr Ser Pro Glu Glu Ala Ala Arg Lys Leu
                485                 490                 495
Glu Glu Glu Gly Trp Ile Asp Ala Asp Gly Asp Gly Ile Arg Glu Lys
            500                 505                 510
Val Ile Asp Gly Val Val Val Pro Phe Arg Phe Arg Leu Cys Tyr Tyr
        515                 520                 525
Val Lys Ser Val Thr Ala Arg Thr Ile Ala Glu Tyr Val Ala Thr Val
    530                 535                 540
Cys Lys Glu Val Gly Ile Glu Cys Cys Leu Leu Gly Leu Asp Met Ala
545                 550                 555                 560
Asp Tyr Ser Gln Ala Leu Glu Glu Lys Asn Phe Asp Ala Ile Leu Ser
                565                 570                 575
Gly Trp Cys Leu Gly Thr Pro Pro Glu Asp Pro Arg Ala Leu Trp His
            580                 585                 590
Ser Glu Gly Ala Leu Glu Lys Gly Ser Ala Asn Ala Val Gly Phe Cys
        595                 600                 605
Asn Glu Glu Ala Asp Arg Ile Ile Glu Gln Leu Ser Tyr Glu Tyr Asp
    610                 615                 620
Ser Asn Lys Arg Gln Ala Leu Tyr His Arg Phe His Glu Val Ile His
625                 630                 635                 640
Glu Glu Ser Pro Tyr Ala Phe Leu Tyr Ser Arg Gln Tyr Ser Leu Val
                645                 650                 655
Tyr Lys Glu Phe Val Lys Asn Ile Phe Val Pro Thr Glu His Gln Asp
            660                 665                 670
Leu Ile Pro Gly Ala Gln Asp Glu Thr Val Asn Leu Ser Met Leu Trp
        675                 680                 685
Val Asp Lys Glu Glu Gly Arg Ser Pro Leu Tyr Leu Lys Thr Ser Ala
    690                 695                 700
Phe Asp Ser Leu Asn Ala Leu Cys Tyr His Leu Cys Glu Phe Cys Asp
705                 710                 715                 720
Ser Gln Cys Cys Ser Arg Arg Pro Ala
                725
<210>993
<211>492
<212>PRT
<213>Chlamydia trachomatis
<400>993
Asp Leu Arg Tyr Ile Leu Lys Arg Leu Leu Leu Ile Pro Leu Thr Leu
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Phe Ala Ile Ile Ser Val Asn Phe Val Ile Leu Asn Ala Ala Pro Gly
             20                  25                  30
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Asp Leu Leu Glu Glu His Ser Val Asp Ala Gln Gly Glu Ala Gly Arg
35 40 45
Ser Asp Lys Ile Arg Thr Tyr Lys Gly Pro Asp Arg Tyr Leu Gln Phe
50 55 60
Arg Glu His Tyr Gly Leu Thr Leu Pro Ile Phe Phe Asn Thr Arg Pro
65 70 75 80
Gln Ile Ser Arg Ser Glu Leu Arg Ala Gly Ile Gln Glu Ile Ile Asp
85 90 95
Gly Thr Ile His Lys Lys Ser Lys Thr Gly Ser Ile Thr Asn Ile Lys
100 105 110
Val Tyr Trp Gly Asp Cys Ala Lys Phe Ile Met Pro Ala Leu Leu Ala
115 120 125
Glu Ala Glu Asp Ser Ser Lys Glu Asp Ile Tyr Arg His Val Ala Ala
130 135 140
Asp Leu Phe Ile Arg Gly Gly Ile Arg Gln Gly Ile Val Glu Pro Arg
145 150 155 160
Leu Leu Glu Glu Gln Arg Glu Tyr Asn Gln Lys Val Ser Lys Ser Asn
165 170 175
Ala Glu Leu Val Arg Leu Leu Asn Glu Asp Asn Ile Glu Val Lys Val
180 185 190
Ala Ala Leu Gln Glu Trp Val Glu Gln Glu Gly Gly Arg Gly Gln Leu
195 200 205
Met Arg Arg Asp Leu Trp Arg Ile Phe Phe Leu Glu Thr Arg Phe Ala
210 215 220
Lys Tyr Leu Ser Arg Ile Val Arg Leu Asp Phe Gly Thr Leu Arg Asn
225 230 235 240
Asp Cys His Lys Thr Val Val Ser Glu Val Ile Lys Arg Leu Gly Ser
245 250 255
Ser Leu Ile Leu Ser Leu Leu Pro Met Ile Val Val Phe Ile Leu Cys
260 265 270
Gln Val Phe Gly Met Ile Met Ala Val Asn Lys Asn His Trp Ile Asp
275 280 285
His Leu Leu Asn Phe Leu Phe Leu Ile Leu Phe Ser Ile Pro Val Phe
290 295 300
Val Ala Val Pro Trp Ile Ile Asp Asn Phe Val Leu Asn Lys Thr Val
305 310 315 320
Pro Phe Thr Ser Ile Ser Met Pro Tyr Ser Gly Leu Cys Ser Ser Pro
325 330 335
Glu Ile Phe Lys Glu Met Thr Ser Phe Glu Lys Leu Thr Asp Ile Val
340 345 350
Leu His Ser Phe Leu Pro Phe Cys Ala Val Ser Tyr Gly Ala Phe Ala
355 360 365
Ala Gln Ser Arg Leu Ser Arg Ala Val Phe Leu Glu Val Leu Gly Glu
370 375 380
Asp His Ile Ser Ala Leu Arg Ala Arg Gly Ile Ser Gln Tyr Asp Ile
385 390 395 400
Leu Val Arg His Val Gly Lys Asn Ser Ala Ala Thr Leu Ile Thr Ser
405 410 415
Leu Ala Ser Ser Leu Ser Ala Leu Leu Gly Gly Ala Leu Val Val Glu
420 425 430
Thr Leu Phe Asp Ile Asp Gly Phe Gly Lys Phe Phe Tyr Gln Ala Ile
435 440 445
Leu Asn Arg Asp His Asn Val Val Met Phe Ser Val Ile Met Gly Ser
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Val Ile Ser Leu Ile Gly Tyr Leu Ile Gly Asp Ile Cys Tyr Val Leu
465 470 475 480
Leu Asp Pro Arg Val Gln Leu Glu Glu Arg Lys Val
485 490

<210>994
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<212>PRT

<213>Chlamydia trachomatis
<400>994

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Phe Phe Arg Ala Tyr Asn Arg Arg Ala Leu Pro Ser Ile Ala Leu Lys
             20                  25                  30
Phe Phe Ile Gly Leu Met Leu Ile Gly Ile Tyr Ala Pro Leu Phe Ala
         35                  40                  45
Ser Ser Lys Pro Ile Leu Val Arg Trp His Gly Glu Trp Tyr Ser Pro
     50                  55                  60
Leu Phe Arg Tyr Leu Leu Phe Pro Gly Phe Tyr Thr Lys Ser Ile Asp
 65                  70                  75                  80
Leu Phe Phe Asn Val Leu Met Leu Thr Leu Pro Phe Phe Ile Leu Gly
                 85                  90                  95
Phe Arg Tyr Leu Ser Gly Val Trp Lys Lys Leu Phe Leu Gly Val Val
            100                 105                 110
Thr Gly Ile His Ile Ala Val Phe Ser Phe Ala Leu Ser Gly Arg Val
        115                 120                 125
Gln Asp Pro Cys Arg Asp Glu Leu Leu Lys Gln Lys Arg Ala Lys His
    130                 135                 140
Leu Gln Gln Glu Leu Lys Thr Thr Pro Lys Thr Glu Phe Leu Pro Thr
145                 150                 155                 160
Ile Ala Lys Arg Thr Arg Thr Trp Glu Ser Glu Arg Ala Tyr Met Ser
                165                 170                 175
Lys Tyr Glu Gln Leu Gly Met Leu Val Lys Ala Lys Tyr Arg Lys Met
            180                 185                 190
Gln His Asp His Leu Glu Lys Gln Arg Glu Ala Tyr Glu Leu Cys Lys
        195                 200                 205
Gln Ser Pro Met Pro Thr Leu Arg Phe Leu Glu Met Lys Asn Glu Thr
    210                 215                 220
Ala Ser Leu Arg Phe Phe Lys Asn Lys Ile Asn Lys Leu Lys Ala Ser
225                 230                 235                 240
Tyr Pro Glu Gly Phe Glu Gly Trp Gly Thr Leu Leu Glu Asp Tyr Arg
                245                 250                 255
Pro Tyr Leu Met Ala Arg Ala Arg Ser Glu His Ala Leu Asn Met Ala
            260                 265                 270
Ile Tyr Glu Gln His Pro Gln Glu Glu Leu Arg Ala Ala Phe Glu Ala
        275                 280                 285
Leu Glu Glu Lys Glu Ala Pro Phe Arg Glu Gln Leu Ala Phe Val Arg
    290                 295                 300
Ser Leu Leu Glu Glu Arg Glu Ala Leu Asn Asn Ser Ile Thr Phe Ile
305                 310                 315                 320
Met Asp Lys Arg Asn Trp Ile Glu Thr Glu Ser Glu Gln Val Gln Met
                325                 330                 335
Val Leu Asn Pro Leu Leu Ser Ser Phe His Trp Glu Asp Asp Ala Gly
            340                 345                 350
Gly Ser Arg Glu Met Asn Lys Tyr Val His Trp Trp Gln Leu Thr Arg
        355                 360                 365
Ile Asn Arg Lys Asp Leu Leu Ala Ser Leu Ile Phe Gly Ile Arg Ile
    370                 375                 380
Ala Ile Val Val Gly Gly Leu Gly Val Ser Ile Ala Leu Phe Ile Gly
385                 390                 395                 400
Ile Ile Val Gly Leu Leu Ser Gly Tyr Phe Gly Gly Lys Val Asp Met
                405                 410                 415
Leu Leu Ser Arg Val Thr Glu Ile Trp Glu Thr Met Pro Met Leu Phe
            420                 425                 430
Ile Leu Met Leu Val Val Ala Ile Thr Gln Lys Lys Ser Leu Ile Leu
        435                 440                 445
Asp Ser Val Leu Leu Gly Cys Phe Gly Trp Val Ser Ile Ser Arg Tyr
    450                 455                 460
Val Arg Ile Glu Thr Leu Lys Gln Arg Asn Leu Gly Tyr Val Leu Ala
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465                 470                 475                 480
Ala Thr Asn Leu Cys Tyr Ser His Tyr His Ile Met Val His Gln Ile
                485                 490                 495
Leu Pro Asn Val Ile Val Pro Val Ile Ser Leu Leu Pro Phe Ser Met
            500                 505                 510
Met Ala Met Ile Ser Cys Glu Ala Gly Leu Thr Phe Leu Gly Leu Gly
        515                 520                 525
Glu Glu Ser Ser Ala Ser Trp Gly Asn Leu Leu Arg Glu Gly Val Thr
    530                 535                 540
Ala Phe Pro Ser Glu Ser Ala Ile Leu Trp Pro Pro Ala Ile Met Leu
545                 550                 555                 560
Thr Leu Leu Leu Met Ala Ile Ala Val Ile Gly Asp Gly Ile Arg Asp
                565                 570                 575
Ala Leu Asp Pro Lys Met Gln Asp
            580
<210>995
<211>170
<212>PRT
<213>Chlamydia trachomatis
<400>995
Met Ala Glu Lys Phe Phe Val Val Ser Pro Thr Ser Lys Asn Cys Leu
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Ala Gln Ala Cys Ser Gln Gly Leu Pro Ile Asn Arg Thr Pro Pro Ile
             20                  25                  30
Gln Ile Ile Val His Phe Arg Gly Asp Ser Ile Phe His Ser Arg Leu
         35                  40                  45
Ser Pro Ala Pro Val Phe Thr Cys Leu Phe Leu Gly Pro Gly Ala His
     50                  55                  60
Lys Ala Met Glu Gly Leu Val Arg Trp Cys Glu Ala Tyr Ala Asn Lys
 65                  70                  75                  80
Met Pro Pro Lys Leu Ser Phe Leu Asp Leu Ser Ser Phe Lys Glu Lys
                85                  90                  95
Arg Leu Ala Ile Leu Gln Glu Ile Arg Gln Ile Pro Phe Gly Thr Arg
            100                 105                 110
His Thr Cys Glu Glu Ile Ala Glu Arg Thr Lys Thr His Thr Glu Glu
        115                 120                 125
Val Leu Ile Ala Cys Gln Glu Asn Pro Leu Pro Leu Leu Ile Pro Cys
    130                 135                 140
His Arg Val Leu Ser Ile His Asp Tyr Pro Gly Gly Glu Lys Leu Tyr
145                 150                 155                 160
Lys Ala Leu Thr Glu Phe Glu Glu Leu Ser
                165                 170
<210>996
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<212>PRT
<213>Chlamydia trachomatis
<400>996
Glu Ile Ser Gln His Arg Thr Arg Gln Leu Met Lys Arg Leu Phe Phe
  1                 5                  10                  15
Ile Cys Ala Leu Ala Leu Ser Pro Leu Ala Tyr Gly Ala Val Gln Lys
             20                  25                  30
Asp Pro Met Leu Met Lys Glu Thr Phe Arg Asn Asn Tyr Gly Ile Ile
         35                  40                  45
Val Phe Lys Gln Glu Trp Asn Lys Arg Gly Cys Asp Gly Ser Ile Thr
     50                  55                  60
Arg Val Phe Lys Asp Gly Thr Thr Thr Leu Glu Val Tyr Ala Gln Gly
 65                  70                  75                  80
Ala Leu His Gly Glu Val Thr Arg Thr Phe Pro His Ser Thr Thr Leu
                85                  90                  95
Ala Val Ile Glu Thr Tyr Asp Gln Gly Arg Leu Leu Ser Lys Lys Thr
            100                 105                 110
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Sequence Listing

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Phe Phe Pro Asn Ala Leu Pro Ala Lys Glu Ala Val Tyr His Glu Asp
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Gly Ser Phe Ser Leu Thr Arg Trp Pro Asp Asn Asn Asn Ser Asp Thr
    130                 135                 140
Ile Thr Asp Pro Cys Phe Val Glu Lys Thr Tyr Gly Gly Arg Val Leu
145                 150                 155                 160
Glu Gly His Tyr Thr Ser Phe Asn Gly Lys Tyr Ser Ser Lys Ile Leu
                165                 170                 175
Asn Gly Glu Gly Val Arg Ser Thr Phe Ser Ser Asp Ser Ile Leu Leu
            180                 185                 190
Thr Glu Glu Ser Phe Asn Asp Gly Val Met Val Lys Lys Thr Thr Phe
        195                 200                 205
Tyr Ser Thr Arg Glu Pro Glu Thr Val Thr His Tyr Val Asn Gly Tyr
    210                 215                 220
Leu Thr Glu Phe Gly Leu Pro Ile Phe Leu Val Gly Phe Gln Ile Arg
225                 230                 235                 240
Leu Lys Asn Gly Asp Met Asp Ile Lys Thr Ala Leu Gln Ser Tyr Leu
                245                 250                 255
Lys Met Val Val Arg Leu Leu Lys Ser His Leu Tyr Ala Glu Gln Lys
            260                 265                 270
Met Glu Ser Asn Ser Asp Thr Met Asn Lys Arg Ile Ser Leu Lys Arg
        275                 280                 285
Phe Leu Gly Ser Thr Thr Ser Cys Met Glu Ser Ala Lys Ser Met Arg
    290                 295                 300
Arg Gly Tyr Ala Asn Pro Asn Gly Ile Thr Lys Ala Asn Leu Ser Arg
305                 310                 315                 320
Lys Ser Ser Leu Asn Asp Ser Val Pro Pro Asp Asn Ser Thr Leu Gly
                325                 330                 335
Ala Ser Trp Leu Lys Ser Ser Leu Leu Ser Leu Gln Arg Pro Arg Thr
            340                 345                 350
Val Trp Pro Arg Leu Ala Leu Lys Gly Phe Leu
        355                 360
<210>997
<211>132
<212>PRT
<213>Chlamydia trachomatis
<400>997
Trp Arg Asn Gly Gln Lys Asn Asp Ile Leu Leu Asp Ser Arg Thr Arg
  1               5                  10                  15
Asn Arg His Ser Leu Cys Gln Trp Val Pro His Gly Val Arg Phe Thr
             20                  25                  30
Tyr Leu Pro Gly Gly Ile Pro Asn Thr Ile Glu Glu Trp Arg Tyr Gly
         35                  40                  45
His Gln Asp Gly Leu Thr Ile Leu Phe Lys Asn Gly Cys Lys Ile Ala
     50                  55                  60
Glu Val Pro Phe Val Arg Gly Ala Lys Asn Gly Ile Glu Leu Arg Tyr
 65                  70                  75                  80
Asn Glu Gln Glu Asn Ile Ala Glu Glu Ile Ser Trp Gln His Asn Ile
                 85                  90                  95
Leu His Gly Val Arg Lys Ile His Ala Ala Gly Val Cys Lys Ser Glu
            100                 105                 110
Trp Tyr Tyr Lys Gly Lys Pro Val Ser Gln Ile Lys Phe Glu Arg Leu
        115                 120                 125
Ser Ala Ala Arg
    130
<210>998
<211>790
<212>PRT
<213>Chlamydia trachomatis
<400>998
Met Leu Val Pro Leu Ser Leu Leu Gln Lys Phe Phe Ser Ser Pro Leu
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  1               5                  10                  15
Ser Ile Glu Glu Ile Leu Gln Ala Cys Asp Arg Ile Gly Ile Glu Ala
             20                  25                  30
Glu Cys Ser Asn Val Phe Pro Asp Ser Leu Asn Thr Val Val Thr Gly
         35                  40                  45
Lys Ile Leu Ser Ala Ser Pro His Pro Asp Ala Glu Arg Leu Thr Val
     50                  55                  60
Ala Ile Val Phe Asp Gly Lys Gly Lys Arg Gln Ile Ile Cys Gly Ala
 65                  70                  75                  80
Pro Asn Cys Arg Ala Gly Ile Ile Val Pro Ile Ala Leu Pro Gly Ala
                 85                  90                  95
Lys Leu Arg Asn Ala Ser Gly Glu Ile Thr Thr Ile Lys Lys Ala Lys
            100                 105                 110
Ile Arg Gly Leu Glu Ser Gln Gly Met Cys Cys Gly Ala Asp Glu Leu
        115                 120                 125
Gly Phe Pro His Leu Gln Lys Ala Gln Arg Gly Ile Phe Glu Phe Pro
    130                 135                 140
Ala Asp Thr Pro Leu Gly Glu Ser Ala Cys Met Leu Leu Ala Gly Ala
145                 150                 155                 160
Ser Leu Glu Cys Ser Leu Thr Pro Asn Leu Gly His Cys Ala Ser Leu
                165                 170                 175
Leu Gly Leu Ala Arg Glu Ile Ser Phe Leu Ser Pro Val Ser Leu Asn
            180                 185                 190
Ile Pro Glu Glu Phe Ser Phe Ala Ser Leu Pro Gln Glu Thr Ser Ile
        195                 200                 205
Cys Asp Met His Asp Ala Gly Ala Cys Pro Val Phe Tyr Ser Val Lys
    210                 215                 220
Ile Ser Gly Leu Ser Cys Arg Arg Ser Pro Glu Tyr Leu Gln Ala Ala
225                 230                 235                 240
Leu Thr Ala Leu Gly Gln Lys Pro Leu Asn Ala Ile Val Asp Ile Thr
                245                 250                 255
Asn Tyr Val Met Leu Ser Leu Gly Gln Pro Leu His Ala Tyr Asp Ser
            260                 265                 270
Gln Ala Val Glu Gln Lys Ser Leu His Ala Ala Thr Leu Gln Ser Ala
        275                 280                 285
Gln Pro Leu Thr Leu Leu Asn Gln Glu Thr Tyr Thr Leu Pro Ala Gly
    290                 295                 300
Ser Leu Val Val Ala Asp Gln His Asn Ile Leu Gly Leu Ala Gly Val
305                 310                 315                 320
Met Gly Ser Ala Ala Ser Ser Cys Ser Glu Asn Thr Thr Glu Ile Ile
                325                 330                 335
Leu Glu Ala Ala Tyr Phe Gln Pro Gln Ala Val Arg Lys Tyr Gln Arg
            340                 345                 350
Thr Ile Gln Leu His Thr Glu Ala Ala Tyr Arg Phe Thr Arg Gly Val
        355                 360                 365
Asp Pro Gln Gly Val Leu Pro Ala Leu His Ala Ala Ile His Met Ile
    370                 375                 380
Gln Ser Leu Phe Pro Asp Ala Gln Ile Ser Pro Ile Gln Lys Ile Gly
385                 390                 395                 400
Asp Asp Ser Phe Phe Pro Leu Ser Leu Ser Val Arg Pro Lys Thr Ile
                405                 410                 415
Lys Arg Leu Leu Asp Ile Glu Leu Ser Thr Ala Glu Ile Val Ala Lys
            420                 425                 430
Leu Phe Ser Leu Gly Phe Gln Thr Ala Val Glu Glu Gln Ala Val Arg
        435                 440                 445
Val Glu Val Pro Ser Tyr Arg His Asp Ile Gln Glu Glu Thr Asp Leu
    450                 455                 460
Val Glu Glu Ile Cys Arg Thr Thr Pro Phe Val Gln Lys Thr Gln Lys
465                 470                 475                 480
Ile Leu Pro Thr Tyr Thr Pro Ile Tyr Ser Leu Lys Arg Glu Leu Thr
                485                 490                 495
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Sequence Listing

sequence.ST25

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Ala Phe Leu Ala Asn Gly Gly Leu Gln Gln Phe Phe Thr Cys Ser Leu
            500                 505                 510
Leu Asp Thr Glu Val Ser Ser Leu Ser Leu Gln Glu Ser Ser Leu Ile
        515                 520                 525
Pro Val Gln Asn Ser Ser Trp Lys Leu Arg Asp Ser Leu Leu Pro Gly
    530                 535                 540
Met Leu Lys Ser Ala Ala Thr Asn Leu His Arg Gln Ala Pro Tyr Val
545                 550                 555                 560
Tyr Ala Phe Glu Ile Gly Asn Val Tyr Ser Lys Glu Gln Asn Arg Tyr
                565                 570                 575
Gln Glu Glu Glu Arg Val Ala Ile Leu Leu Ser Arg Gln Val Met Asp
            580                 585                 590
Asp Ser Trp Gln Gly Lys Thr Pro Leu Ser Phe Tyr Thr Ile Lys Gly
        595                 600                 605
Trp Val Glu Lys Leu Leu Cys Gln Ser Gly Ala Ser Ile Glu Asp Phe
    610                 615                 620
Ser Leu Gln Pro Ser Gln His Pro Asn Phe His Pro Tyr Gln Gln Ala
625                 630                 635                 640
Ala Leu Tyr Gln Lys Lys His Leu Leu Gly Ile Phe Gly Thr Leu His
                645                 650                 655
Pro Gln Leu Cys Arg Lys Ala Gln Ile Lys His Asp Val Val Phe Ala
            660                 665                 670
Glu Leu Ser Leu Asn Val Leu Leu Ser Leu Lys Lys Lys Ser Gly Pro
        675                 680                 685
His Tyr Val Pro Tyr Pro Ile Tyr Pro Ala Ser Ser Arg Asp Ile Thr
    690                 695                 700
Ile Thr Ile Asp Arg Asp Leu Pro Ala Asp Leu Val Arg Arg Glu Leu
705                 710                 715                 720
Leu Ser Phe Glu Ser Lys Trp Leu Glu Ser Val His Ile Val Ser Val
                725                 730                 735
Tyr Gln Gly Arg Asp Ser Ala Ser Gln Ser Lys Asn Val Ser Leu Arg
            740                 745                 750
Met Val Phe Arg Asp His Glu Arg Thr Leu Ser Gly Gln Glu Ile Glu
        755                 760                 765
Glu Glu Tyr Glu Arg Leu Thr Ala Leu Leu Asp Lys Lys Leu Ala Asn
    770                 775                 780
Ile Gly Gln Gly Asn Ser
785                 790
<210>999
<211>256
<212>PRT
<213>Chlamydia trachomatis
<400>999
Ile Leu Arg Ser Gly Val Tyr Ser Ser Lys Tyr Phe Glu Gly Glu Gly
  1               5                  10                  15
Cys Arg Ser Phe Met Gly Ile Glu Gly Arg Gly Ser Gly Ala Met Gln
            20                  25                  30
Ser Lys Lys Thr Ile Lys Trp Leu Lys Gln Ala Leu Val Leu Ser Ser
        35                  40                  45
Ile Val Asn Ile Leu Leu Leu Leu Leu Ile Tyr Ser Thr Val Phe Arg
    50                  55                  60
Lys Asp Ile Tyr Lys Leu Arg Val Phe Pro Gly Asn Leu Ile Ala Lys
65                  70                  75                  80
Ser Ser Arg Ile Gly Lys Ile Pro Glu Asp Ile Leu Glu Arg Leu Glu
                85                  90                  95
Asn Ala Ser Phe Ala Asp Leu Leu Ala Leu Leu Xaa Glu Glu Arg Met
            100                 105                 110
Val Phe Gly His Pro Leu Lys Ser Trp Ala Gln Gly Val Ser Ile Gln
        115                 120                 125
Lys Tyr Phe Val Asp Ile Ala Pro Met Leu Thr His Xaa Leu Thr Phe
    130                 135                 140
```

Ile Lys Leu Lys Ser Pro Glu Arg Thr Trp Leu Leu Pro Asp Ile Asn
145 150 155 160
Asp Gln Glu Phe Thr Arg Ile Cys Gln Tyr Leu Leu Thr Xaa Arg Phe
165 170 175
Pro Phe Ser Ser Arg Gly Phe Phe Arg Ile Met Val Arg Asp Cys Glu
180 185 190
Ala Gly Val Val Asp Glu Asp Val Leu Tyr Arg Phe Cys His Leu Pro
195 200 205
Glu Phe Leu Tyr Val Arg Ser Leu Leu Phe Gly Ala Glu Ile Glu Ala
210 215 220
Ala Ser Val Ala Ser Leu Ala Arg Met Ile Ile Gln Gly Gly Glu Asp
225 230 235 240
Leu Phe Phe Ser Leu Cys Cys Leu Glu Asn Arg Gln Thr Ala Asp Phe
245 250 255

<210>1000
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<212>PRT
<213>Chlamydia trachomatis
<400>1000
Asp Thr Leu Pro Phe Asn Asp Ile Asp Val Ile Ser Thr Met Arg Cys
1 5 10 15
Ser Ala Tyr Cys Thr Ala Ser Ser Tyr His Leu His Val Leu Phe His
20 25 30
Leu Leu Lys Val Asn Tyr Pro Ser Val Leu Ser Arg Glu Tyr Val Leu
35 40 45
Ile Ser Ser Glu Glu Leu Asp Glu Ser Asp Lys Ala Ala Val Phe Phe
50 55 60
Pro Phe Gly Val Cys Val Phe Trp Gly Trp Glu Glu Thr Glu Glu Leu
65 70 75 80
Gln Val Ile Arg Ala Ile Thr Pro Ser Ala Val Asn Pro Leu Pro Asn
85 90 95
Pro Glu Ile Asp Ser Tyr Asp Phe His Tyr Gly Glu Lys Leu Gln Ile
100 105 110
Arg Arg Asp Arg Leu Val Leu Thr Asn Ser Asn Leu Asn Thr Lys Leu
115 120 125
Ala Ile Ser Phe Gly Leu Ala Gln Ser Ile Lys Leu Thr Val Phe Glu
130 135 140
Glu Thr Ile Tyr Lys Thr Val Glu Asn Ser Lys Ser Leu Pro Gln Glu
145 150 155 160
Leu Ala Ser Lys Gly Lys Ile Ser Leu Ser Arg Lys Thr Ile Ala Lys
165 170 175
Lys Ile Gly Glu Leu Phe Leu Asp Lys Ala Ser Val Asn Leu His Ser
180 185 190
Asp Ile Leu Asp Glu Pro Asp Phe Phe Trp Glu His Pro Glu Thr Gln
195 200 205
Pro Phe Tyr Ile Asn Val Leu Thr Cys Leu Asp Val Asn Ala Arg Val
210 215 220
Asn Val Leu Asn His Arg Leu Ala Ile Leu Gly Asp Val Leu Glu Ile
225 230 235 240
Leu Asn Asp Gln Leu Asn His Gln His Ser Ser Ala Leu Glu Trp Thr
245 250 255
Val Ile Trp Leu Ile Ala Leu Glu Val Leu Val Thr Leu Leu Lys Asp
260 265 270
Val Phe Asn Ile Ile
275

<210>1001
<211>206
<212>PRT
<213>Chlamydia trachomatis
<400>1001
Ser Phe Val Ser Phe Val Met Glu Lys Arg Gly Val Ile Val His Ile

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  1               5                  10                  15
Leu Val Cys Leu Leu Thr Ile Phe Gly Thr Leu Ser Leu Pro Ala Phe
            20                  25                  30
Gly Ala His Phe Leu Ala Glu Glu Glu Gln Phe Tyr Met Asp Arg Phe
        35                  40                  45
Val Phe Ser Gly Gln Tyr Pro Asp Met Glu Thr Met Glu Ile His Ala
    50                  55                  60
Glu Arg Lys Lys Arg Val Gln Phe Asp Val Thr Gly Ser Phe Pro Lys
65                  70                  75                  80
Leu Glu Ser Val Val Tyr Lys Gly Ser Phe Gly Leu Leu Arg Ser Lys
                85                  90                  95
Ile Lys Gly Glu Cys Pro Glu Leu Ser Ser Val Asn Leu Ser Cys Thr
            100                 105                 110
Ser Cys Arg Met Asp Leu Asp Phe Arg Gly Glu Trp Lys Lys Asn Ala
        115                 120                 125
Ser Ile Tyr Ile Arg Asn Glu Gln Glu Pro Ile Thr Ile Met Leu Pro
    130                 135                 140
Lys Asp Ile Gly Val Val Val Tyr Thr Gln Val Asp Met Asn Ser Lys
145                 150                 155                 160
Val Val Ala Glu Gly Ser Leu Ile Lys Arg Gly Arg Gly Phe Trp Lys
                165                 170                 175
Lys Thr Phe Arg Asn Ser Leu Val Gly Glu Ser Pro Val Thr Leu Thr
            180                 185                 190
Phe His Val Glu Thr Arg Asn Gly Gly Val Ile Phe Leu Arg
        195                 200                 205
<210>1002
<211>280
<212>PRT
<213>Chlamydia trachomatis
<400>1002
Arg Lys Leu Ser Ala His Arg Phe Phe Ile Pro Lys Asp Lys Asn Ile
  1               5                  10                  15
Arg Phe Leu Pro Arg Asp Ser Phe Ile Phe Ser Thr Asp Glu Leu Leu
            20                  25                  30
Tyr Pro Tyr Ile Phe Met Gln Ile Thr Leu Pro Gly Val Val Leu Thr
        35                  40                  45
Asn Ser Pro Ala Glu Lys Gln His Val Ile Val Lys Ile Phe Ser Pro
    50                  55                  60
Ala Gly Leu Leu Ser Ala Phe Ala Lys Asn Gly Ala Ser Leu Ser Cys
65                  70                  75                  80
Asp Phe Arg Glu Ser Leu Phe Pro Ile Ser Phe Ser Leu Phe Thr Ile
                85                  90                  95
Gln Gln Ser Pro Pro Lys Met Arg Lys Val Ile Gln Gly Glu Leu Gln
            100                 105                 110
Asn Pro Phe Thr Thr Ile Lys Ser Ser Tyr Pro Leu Leu Gln Ser Ala
        115                 120                 125
Gly Lys Met Ile Gln Ala Ile Leu Lys Thr Gln Trp His Glu Lys Pro
    130                 135                 140
Ser Pro His Leu Phe Ser Leu Phe Phe Asn Phe Leu Gln Arg Ile Pro
145                 150                 155                 160
Glu Thr Gln Tyr Pro Asn Phe Phe Ser Ser Met Phe Leu Leu Lys Leu
                165                 170                 175
Leu Gln His Glu Gly Ser Leu Asp Leu Ser Arg Ser Cys Thr Leu Cys
            180                 185                 190
Lys Thr Ser Leu Glu Ser Ser Thr Ile Tyr Arg Tyr Glu Gly Ala Leu
        195                 200                 205
Phe Cys Glu Lys His Ala His Glu Glu Thr Ile Ser Phe Ser Gln Glu
    210                 215                 220
Glu Asp His Ile Leu Arg Val Ile Val Gln Ala Lys Lys Phe Gln Glu
225                 230                 235                 240
Leu Val Cys Leu Ala Glu Phe Pro Ile Asp Ile Asp Thr Lys Ile Asp
```

245 250 255
Ala Leu Phe Ser Ser Phe Leu Ser Glu Thr Ser Glu Pro Ser Ser Leu
260 265 270
Tyr Tyr Lys Gly Lys Thr Leu Leu
275 280

<210>1003
<211>386
<212>PRT
<213>Chlamydia trachomatis
<400>1003
Met Ser Ile Glu His Ile Leu Ile Ile Asp Asp Asp Pro His Ile Leu
1 5 10 15
Ala Leu Leu Ser Glu Ile Leu Gly Ala Arg Asn Phe Ser Val Ser Ser
20 25 30
Ala Pro Gly Val Lys Gln Ala Ile Lys Gln Ile Ser Asn Cys Pro Phe
35 40 45
Asp Leu Ile Ile Ser Asp Met Asn Met Pro Asp Gly Ser Gly Leu Asp
50 55 60
Ile Ile Gln Tyr Thr Lys Gln His Arg Pro Gln Thr Pro Ile Leu Val
65 70 75 80
Ile Thr Ala Phe Gly Thr Ile Gln Asn Ala Val Glu Ala Met Arg Phe
85 90 95
Gly Ala Phe Asn Tyr Leu Thr Lys Pro Phe Ser Pro Asp Ala Leu Phe
100 105 110
Thr Leu Ile Ala Lys Ala Glu Glu Leu Gln Ala Leu Gln Gln Asp Asn
115 120 125
Leu Phe Leu Gln Ser Gln Gly Ser Ser Ile Ser His Pro Leu Ile Ala
130 135 140
Glu Ser Pro Ser Met Lys Gln Leu Leu Asp Lys Ala Arg Arg Ala Ala
145 150 155 160
Asn Ser Ser Ala Asn Ile Phe Val His Gly Glu Ser Gly Cys Gly Lys
165 170 175
Glu Asn Leu Ser Phe Phe Ile His Lys His Ser Pro Arg Ser Thr Lys
180 185 190
Pro Tyr Ile Lys Val Asn Cys Ala Ala Ile Pro Asp Thr Leu Leu Glu
195 200 205
Ser Glu Phe Phe Gly His Glu Lys Gly Ala Phe Thr Gly Ala Thr Thr
210 215 220
Lys Lys Val Gly Arg Phe Glu Leu Ala His Gln Gly Thr Leu Leu Leu
225 230 235 240
Asp Glu Ile Thr Glu Ile Pro Ile His Leu Gln Ala Lys Leu Leu Arg
245 250 255
Ala Ile Gln Glu Gln Glu Phe Xaa His Ile Gly Gly Ile Lys Thr Leu
260 265 270
Pro Val Asn Ile Arg Phe Leu Ala Thr Ser Asn Arg Asp Leu Glu Glu
275 280 285
Ala Ile Glu Thr Lys Val Leu Arg Gln Asp Leu Tyr Tyr Arg Leu Ser
290 295 300
Val Ile Ser Leu His Ile Pro Pro Leu Arg Asp Arg Lys Glu Asp Ile
305 310 315 320
Leu Pro Leu Ala His Tyr Tyr Leu Glu Lys Phe Cys Lys Met Asn Asn
325 330 335
Lys Pro Pro Lys Thr Leu Ser Leu Glu Ala Gln Arg Asn Leu Leu Asp
340 345 350
Tyr Ser Trp Pro Gly Asn Val Arg Glu Leu Ser Asn Val Leu Glu Arg
355 360 365
Thr Val Ile Leu Glu Asn Asp Pro Ala Ile Thr Pro Ser Met Leu Ala
370 375 380
Leu Leu
385

<210>1004

<211>261
<212>PRT
<213>Chlamydia trachomatis
<400>1004

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Glu Lys Glu Asn Trp Glu Leu Met Pro Lys Ile Asp Thr Cys Asp Ser
  1               5                  10                  15
Cys Val Ser Asn Thr Glu Leu Leu Ala Ile Arg Thr Arg Val Thr Gln
             20                  25                  30
Ser Tyr Asn Glu Ala Gln Thr Ile Leu Ser Ser Ile Pro Asp Gly Ile
         35                  40                  45
Phe Leu Leu Ser Glu Ser Gly Glu Ile Leu Ile Cys Asn Pro Gln Ala
     50                  55                  60
Arg Ala Ile Leu Gly Ile Pro Lys Asp Ile Gln Leu Val Thr Arg Arg
 65                  70                  75                  80
Phe His Asp Phe Phe Pro Asp Thr Phe Phe Gly Phe Ser Val Gln Glu
                 85                  90                  95
Ala Leu Glu Lys Glu Val Pro Pro Lys Thr Ile Arg Leu Thr Leu Ser
            100                 105                 110
Gln Glu Leu Ser Gln Lys Glu Val Glu Val Phe Val Arg Lys Asn Ile
        115                 120                 125
Ser His Gly Phe Leu Phe Leu Leu Ile Arg Asp Arg Ser Asp Tyr Arg
    130                 135                 140
Gln Leu Glu Gln Ala Ile Glu Lys Tyr Arg Ser Ile Ser Glu Leu Gly
145                 150                 155                 160
Lys Ile Ala Ala Thr Leu Ala His Glu Ile Arg Asn Pro Leu Thr Ser
                165                 170                 175
Ile Ser Gly Phe Ala Thr Leu Leu Lys Glu Glu Leu Ser Ser Glu Arg
            180                 185                 190
His Gln Arg Met Leu Asn Val Ile Ile Glu Gly Thr Arg Ser Leu Asn
        195                 200                 205
Ser Leu Val Ser Ser Met Leu Glu Tyr Thr Lys Ile Gln Pro Leu Asn
    210                 215                 220
Leu Arg Ser Ile Asp Leu Gln Asp Phe Phe Ser Ser Leu Ile Pro Glu
225                 230                 235                 240
Leu Ser Leu Thr Phe Leu Leu Val His Leu Glu Glu Pro Ser Tyr Leu
                245                 250                 255
Leu Tyr Ser Ala Leu
            260
```

<210>1005
<211>222
<212>PRT
<213>Chlamydia trachomatis
<400>1005

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Ala Phe Phe His Ser Ala Gly Asn Phe Met Asn Leu Ile Leu Leu Leu
  1               5                  10                  15
Thr Leu Cys Leu Ser Ser Leu Leu Ser Gly Cys Ser Thr Asp Asn Arg
             20                  25                  30
Gln Thr Ser Tyr Ile Glu Ala Ala Arg Ile Thr Thr Gln Ser Ser Gly
         35                  40                  45
Ser Leu Ile Leu Tyr Pro Val Ile Glu Pro Arg Ser Ala Pro Thr Tyr
     50                  55                  60
His Trp Pro Thr Pro Lys Ser Pro Val Ile Thr Asn Tyr Ser Phe His
 65                  70                  75                  80
Cys His Gly Thr Ser Gly Ser Leu Ser Thr Glu Glu Thr Leu Val Phe
                 85                  90                  95
Asp Cys Asn Gly Ile Lys His Leu Ala Lys Pro Phe Ser Ile His Pro
            100                 105                 110
Leu Leu Val Thr Ile Ala Gln Tyr Ile His His His Phe Pro Ile Thr
        115                 120                 125
Ile Glu Glu Gly Tyr Cys Cys Pro Met His Tyr Lys Phe Leu Leu Thr
    130                 135                 140
```

Sequence Page

```
Ser Asp Thr Ser Ile Ser Glu Gln His Cys Lys Gly Leu Ala Ala Ile
145                 150                 155                 160
Val Ser Thr Gln Gln Pro Val Ser Pro Gln Met Leu Ala Pro Ile Leu
                165                 170                 175
Ser Lys Leu Tyr Arg Gly Leu Pro Leu Pro Ser Lys Thr Phe Thr Leu
            180                 185                 190
Ser His Asn Thr Ile Gln Asn Glu Asp Phe Ile Ile Thr Ser Thr Phe
        195                 200                 205
Lys Lys Gly Lys Pro Val Leu Val Ile Glu Val His His Glu
    210                 215                 220
<210>1006
<211>267
<212>PRT
<213>Chlamydia trachomatis
<400>1006
Met Thr Lys Lys Ile Val Leu Gln Ile Ala Tyr Gln Gly Thr Ser Tyr
  1               5                  10                  15
Ser Gly Trp Gln Tyr Gln Pro Asn Ala Leu Ser Ile Gln Glu Val Leu
            20                  25                  30
Lys Thr Ile Leu Lys Lys Ile Ala Gly Phe Arg Ile Ser Val Ile Ser
        35                  40                  45
Ser Gly Arg Thr Asp Ala Gly Val His Ala Gln Gly Gln Ile Ala His
    50                  55                  60
Phe His Cys Pro Asp His Pro His Phe Thr Asp Pro Arg Gln Ile Gln
65                  70                  75                  80
Lys Met Leu Asn Ala Leu Leu Pro His Asp Ile Val Ile Arg Asp Ala
                85                  90                  95
Val Met Thr Asp Gly Asp Phe His Ser Arg Phe Ser Ala Ile Ala Lys
            100                 105                 110
Glu Tyr Arg Tyr Thr Leu Ser Leu Leu Pro Lys Pro Leu Pro His His
        115                 120                 125
Arg Leu Phe Cys Phe Ser Pro Arg Tyr Lys Leu Asn Ile Ala Arg Met
    130                 135                 140
Gln Glu Ala Ala Gln Tyr Leu Val Gly Thr His Asp Phe Ala Ser Phe
145                 150                 155                 160
Ala Asn Leu Gly Arg Glu Tyr Ser Ser Thr Ile Arg Thr Leu Tyr Thr
                165                 170                 175
Leu Asp Leu Ser Glu Gln Glu His Leu Val Thr Val Ile Cys Arg Gly
            180                 185                 190
Asn Gly Phe Leu Tyr Lys Met Val Arg Asn Ile Val Gly Ala Leu Leu
        195                 200                 205
Asp Ile Gly Lys Gly Lys Tyr Pro Pro Glu His Leu Leu Asp Met Leu
    210                 215                 220
Ala Thr Lys Asp Arg Arg Lys Gly Pro Pro Ser Ala Pro Pro Tyr Gly
225                 230                 235                 240
Leu Ser Leu His His Val Cys Tyr Pro Pro Pro Tyr Gln Trp Phe Cys
                245                 250                 255
Lys His Glu His Asn Asn Ser Ser Glu Gly Lys
            260                 265
<210>1007
<211>222
<212>PRT
<213>Chlamydia trachomatis
<400>1007
Gly Ala Ser Met Asn Leu Ser Cys Ser Leu Val Leu Leu Gly Gly Gly
  1               5                  10                  15
Lys Gly Glu Arg Phe Asn Ser Leu Gln Pro Lys Gln Tyr Thr His Leu
            20                  25                  30
Cys Gly Glu Pro Leu Ile Leu His Ala Leu His Ala Tyr Gln Arg Leu
        35                  40                  45
Pro Phe Val Gln Glu Val Val Val Val Cys Glu Glu Gln Tyr Arg Glu
```

```
     50                  55                  60
Leu Phe Leu Pro Tyr Ser Val Lys Phe Ala Ser Pro Gly Thr Leu Arg
 65                  70                  75                  80
Gln Asp Ser Val Phe Ser Gly Leu Gln Gln Val Phe Thr Pro Trp Val
                 85                  90                  95
Cys Ile His Asp Gly Val Arg Pro Phe Val Tyr Ala Asp Glu Val Ile
            100                 105                 110
Glu Val Cys Ser Ala Ala Arg Lys Thr Gly Ala Ala Ala Leu Ala Ser
        115                 120                 125
Pro Ala Thr Tyr Thr Ile Lys Ser Cys Ala Pro Val Arg Thr Leu Asp
    130                 135                 140
Arg Asp Ala Leu Ala Val Ile His Thr Pro Gln Cys Leu Asp Thr Glu
145                 150                 155                 160
Val Leu Arg Glu Gly Leu Leu Leu Ala Arg Ala Met Asp Phe Ser Leu
                165                 170                 175
Ser Asp Asp Thr Glu Ala Ala Glu Leu Leu Gly Ile Glu Pro Thr Leu
            180                 185                 190
Val Phe Ser Asn Arg Val Gln Ile Lys Val Thr Tyr Pro Glu Asp Leu
        195                 200                 205
Leu Phe Ala Glu Thr Leu Leu Ser Lys Ser Ser Thr Tyr Lys
    210                 215                 220
<210>1008
<211>329
<212>PRT
<213>Chlamydia trachomatis
<400>1008
Leu Phe Val Phe Val Gly Ile Thr Val Ser Leu Thr Thr Ile Leu Ala
  1                 5                  10                  15
Ala Pro Leu Leu Thr Trp Val Trp Ala Asn His Leu Glu Pro Asn Leu
             20                  25                  30
Leu Arg Val Thr Arg Leu Asn Trp Asn Leu Pro Lys Lys Phe Ala His
         35                  40                  45
Leu His Gly Leu Arg Ile Val Gln Ile Ser Asp Leu His Leu Asn His
     50                  55                  60
Ser Thr Pro Asp Ala Phe Leu Lys Lys Val Ser Arg Lys Ile Ser Ser
 65                  70                  75                  80
Leu Ser Pro Asp Ile Leu Val Phe Thr Gly Asp Phe Val Cys Arg Ala
                 85                  90                  95
Lys Val Glu Thr Pro Glu Arg Leu Lys His Phe Leu Cys Ser Leu His
            100                 105                 110
Ala Pro Leu Gly Cys Phe Ala Cys Leu Gly Asn His Asp Tyr Ala Thr
        115                 120                 125
Tyr Val Ser Arg Asp Ile His Gly Lys Ile Asn Thr Ile Ser Ala Met
    130                 135                 140
Asn Ser Arg Pro Leu Lys Arg Ala Phe Thr Ser Val Tyr Gln Ser Leu
145                 150                 155                 160
Phe Ala Ser Ser Arg Asn Glu Phe Ala Asp Thr Leu Asn Pro Gln Ile
                165                 170                 175
Pro Asn Pro His Leu Val Ser Ile Leu Arg Asn Thr Pro Phe Gln Leu
            180                 185                 190
Leu His Asn Gln Ser Ala Thr Leu Ser Asp Thr Ile Asn Ile Val Gly
        195                 200                 205
Leu Gly Asp Phe Phe Ala Lys Gln Phe Asp Pro Lys Lys Ala Phe Thr
    210                 215                 220
Asn Tyr Asn Pro Thr Leu Pro Gly Ile Ile Leu Ser His Asn Pro Asp
225                 230                 235                 240
Thr Ile His His Leu Gln Asp Tyr Pro Gly Asp Val Val Phe Ser Gly
                245                 250                 255
His Ser His Gly Pro Gln Ile Ser Leu Pro Trp Pro Lys Phe Ala Asn
            260                 265                 270
Thr Ile Thr Asn Lys Leu Ser Gly Leu Glu Asn Pro Glu Leu Ala Arg
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```
        275                 280                 285
Gly Leu Phe Ser Phe Pro Glu Glu Ser Arg Leu Leu Tyr Val Asn Arg
    290                 295                 300
Gly Leu Gly Gly Trp Lys Arg Ile Arg Phe Cys Ser Pro Pro Glu Ile
305                 310                 315                 320
Cys Leu Met Arg Cys Leu Tyr Glu Pro
                325
<210>1009
<211>89
<212>PRT
<213>Chlamydia trachomatis
<400>1009
Glu Ser Ser Met Ser Gln Asn Lys Asn Ser Ala Phe Met Gln Pro Val
  1               5                  10                  15
Asn Val Ser Ala Asp Leu Ala Ala Ile Val Gly Ala Gly Pro Met Pro
            20                  25                  30
Arg Thr Glu Ile Ile Lys Lys Met Trp Asp Tyr Ile Lys Glu Asn Ser
        35                  40                  45
Leu Gln Asp Pro Thr Asn Lys Arg Asn Ile Asn Pro Asp Asp Lys Leu
    50                  55                  60
Ala Lys Val Phe Gly Thr Glu Lys Pro Ile Asp Met Phe Gln Met Thr
65                  70                  75                  80
Lys Met Val Ser Gln His Ile Ile Lys
                85
<210>1010
<211>104
<212>PRT
<213>Chlamydia trachomatis
<400>1010
Val Tyr Arg Gln Asn Lys Lys His Ser Gln Val Phe Ser Lys Lys Arg
  1               5                  10                  15
Gly Lys Ser Glu Leu Glu Asn Asp Leu Phe Leu Gly Leu Leu Arg Lys
            20                  25                  30
Lys Leu Ile Pro Lys Arg Arg Ser Cys Tyr His Glu Arg Val Leu Ala
        35                  40                  45
Val Thr Ala Thr Val Ile Val Glu Ile Thr Gly Lys Glu Asn Ser Ser
    50                  55                  60
Leu Lys Lys Lys Ser Leu Lys Leu Asp Ile Leu Arg Lys Val Ser Lys
65                  70                  75                  80
Ile Met His Glu Asn Phe Asp Lys Arg Leu Glu Val Leu Leu Glu Gly
                85                  90                  95
Leu Ala Leu Thr Arg Arg Ser Leu
            100
<210>1011
<211>250
<212>PRT
<213>Chlamydia trachomatis
<400>1011
Leu Gly Gly Leu Phe Asp Pro Glu Gly Lys Glu Asn Glu Leu Lys Glu
  1               5                  10                  15
Leu Glu Gln Gln Ala Val Gln Asp Gly Phe Trp Asp Asp Val Ala Arg
            20                  25                  30
Ala Gly Lys Ile Ser Glu Arg Ile Ala Arg Leu Lys Gln Gln Leu Ser
        35                  40                  45
Glu Phe Asn Glu Leu Lys Asn Lys Val Ser Thr Ile Gln Phe Phe Leu
    50                  55                  60
Glu Asp Glu Glu Ser Ser Lys Asp Leu Glu Met Gln Lys Glu Leu Glu
65                  70                  75                  80
Lys Glu Phe Val Phe Cys Glu Lys Lys Ile Thr Glu Trp Glu Thr Leu
                85                  90                  95
Arg Leu Leu Ser Gly Glu Leu Asp Arg Asn Ser Cys Phe Leu Ser Ile
```

Sequence Listing

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            100                 105                 110
Asn Ala Gly Ala Gly Gly Thr Glu Ser Cys Asp Trp Val Glu Met Cys
        115                 120                 125
Cys Ala Cys Ile Cys Asp Gly Leu Val Val Ile Ser Trp Arg Val Glu
    130                 135                 140
Val Ile Asp Arg Leu Asp Gly Glu Val Ala Gly Ile Lys His Ile Thr
145                 150                 155                 160
Leu Lys Leu Val Gly Glu Tyr Ala Tyr Gly Tyr Ala Lys Ala Glu Ser
                165                 170                 175
Gly Val His Arg Leu Val Arg Ile Ser Pro Phe Asp Ser Asn Ala Lys
            180                 185                 190
Arg His Thr Ser Phe Ala Ser Val Glu Val Phe Pro Glu Ile Asp Asp
        195                 200                 205
Lys Ile Glu Val Glu Ile His Pro Gly Asp Ile Arg Ile Asp Thr Tyr
    210                 215                 220
Arg Ser Ser Gly Ala Gly Gly Gln His Val Asn Val Thr Asp Ser Ala
225                 230                 235                 240
Val Arg Ile Thr Gln Xaa Leu Arg Glu Leu
                245                 250
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<210>1012
<211>91
<212>PRT
<213>Chlamydia trachomatis
<400>1012

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Ser Asn Ser Lys Pro Arg Ser Leu Tyr Glu Tyr Leu Arg Ala Arg Ile
  1               5                  10                  15
Tyr Gln Lys Leu Leu Gln Glu Arg Leu Glu Lys Gln Asn Ile Asp Arg
            20                  25                  30
Lys Asn Lys Lys Glu Ile Ser Trp Gly Ser Gln Ile Arg Asn Tyr Val
        35                  40                  45
Phe Gln Pro Tyr Thr Leu Val Lys Asp Val Arg Thr Gly Tyr Glu Val
    50                  55                  60
Gly Asn Ile Gln Ala Met Met Asp Gly Glu Leu Leu Asp Ala Phe Ile
65                  70                  75                  80
Lys Ala Tyr Leu Val Asp Tyr Gly Glu Ile Thr
                85                  90
```

<210>1013
<211>172
<212>PRT
<213>Chlamydia trachomatis
<400>1013

```
Leu Trp Arg Asn Tyr Met Thr Thr Met Arg Asp Pro Leu Leu Glu Ile
  1               5                  10                  15
Arg Tyr Thr Val Pro Glu Asp Ala His Tyr Met Arg Leu Trp Leu Asn
            20                  25                  30
Asp Pro Lys Ile Leu Arg Gly Phe Pro Leu Lys Thr Glu Ala Glu Ile
        35                  40                  45
Arg Asp Ser Val Asn Phe Trp Val Ser Phe Tyr Arg Cys Arg Ser Ser
    50                  55                  60
Leu Thr Ala Val Tyr Asn Gly Glu Val Ala Gly Val Ala Thr Leu Ile
65                  70                  75                  80
Leu Asn Pro Tyr Val Lys Val Ala His His Ser Leu Leu Ser Ile Ile
                85                  90                  95
Val Gly Glu Lys Phe Arg Asn Lys Gly Val Gly Thr Ala Leu Leu Asn
            100                 105                 110
Asn Leu Leu His Leu Gly Lys Thr Gln Leu Lys Leu Glu Leu Val Tyr
        115                 120                 125
Leu Glu Val Tyr Glu Gly Asn Pro Ala Ile His Leu Tyr Glu Arg Phe
    130                 135                 140
Gly Phe Val Glu Val Gly Arg Gln Lys Thr Phe Tyr Lys Asp Glu Leu
145                 150                 155                 160
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Gly Tyr Leu Ala Lys Ile Thr Met Glu Arg Val Leu
165 170

<210>1014
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<212>PRT
<213>Chlamydia trachomatis
<400>1014
Met Ala Gly His Ser Lys Trp Ala Asn Thr Lys His Arg Lys Glu Arg
1 5 10 15
Ala Asp His Lys Lys Gly Lys Ile Phe Ser Arg Thr Ile Lys Glu Leu
20 25 30
Ile Ser Ala Val Lys Met Gly Gly Pro Asp Pro Lys Ser Asn Ala Arg
35 40 45
Leu Arg Met Ile Ile Gln Lys Ala Lys Asp Gln Asn Ile Pro Asn Glu
50 55 60
Asn Ile Glu Arg Asn Leu Lys Lys Ala Ser Ser Ala Asp Gln Lys Asn
65 70 75 80
Tyr Glu Glu Val Thr Tyr Glu Leu Tyr Gly Phe Gly Gly Val Gly Ile
85 90 95
Ile Val Glu Ala Met Thr Asp Asn Lys Asn Arg Thr Ala Ser Asp Met
100 105 110
Arg Val Pro Leu Thr Asn Glu Val Gly Leu
115 120

<210>1015
<211>133
<212>PRT
<213>Chlamydia trachomatis
<400>1015
Glu Pro His Ser Leu Gly Tyr Ala Arg Thr Val Asn Lys Arg Gly Gly
1 5 10 15
Ala Leu Val Glu Pro Gly Ser Val Leu Tyr Asn Phe Ser Arg Lys Gly
20 25 30
Ala Cys Tyr Val Pro Lys His Ser Ile Asp Glu Ala Ser Leu Leu Thr
35 40 45
His Val Ile Asp Cys Gly Gly Glu Asp Leu Asp Ser Asp Asp Glu Glu
50 55 60
Phe Phe Leu Val Leu Cys Glu Pro Thr Asp Leu Ala Ser Val Lys Glu
65 70 75 80
Ala Leu Leu Ala Lys Gly Val Thr Cys Ser Glu Glu Arg Leu Ile Tyr
85 90 95
Val Pro Leu Arg Leu Val Asp Cys Asp Glu Glu Thr Gly Lys Ser Asn
100 105 110
Leu Ala Leu Ile Glu Trp Leu Glu Asn Ile Asp Asp Val Asp Asp Val
115 120 125
Tyr His Asn Met Ala
130

<210>1016
<211>603
<212>PRT
<213>Chlamydia trachomatis
<400>1016
Val Thr Gln Lys Ile Arg Val Val Val Gln Gln Gln His Ser Ile Leu
1 5 10 15
Tyr Arg Gly Ser Ser Tyr Thr Thr Gly Pro Arg Asn Glu Gly Val Phe
20 25 30
Gly Pro Gly Pro Glu Gly Leu Pro Asp Met Ser Leu Pro Ser Tyr Asp
35 40 45
Pro Thr Asn Lys Thr Ser Leu Leu Thr Phe Leu Ser Asn Pro His Val
50 55 60
Lys Xaa Lys Met Leu Glu Asn Ser Gly His Phe Val Phe Ile Asp Thr
65 70 75 80

```
Asp Arg Ser Ser Phe Ile Leu Val Pro Asn Gly Asn Trp Asp Gln Val
                 85                  90                  95
Cys Ser Ile Lys Val Gln Asn Gly Lys Thr Lys Glu Asp Leu Asp Ile
            100                 105                 110
Lys Asp Leu Glu Asn Met Cys Ala Lys Phe Cys Thr Gly Phe Asn Lys
        115                 120                 125
Phe Ser Gly Asp Trp Asp Ser Arg Val Glu Pro Met Met Ser Ala Lys
    130                 135                 140
Ala Gly Val Ala Ser Gly Gly Asn Leu Pro Asn Thr Val Ile Ile Asn
145                 150                 155                 160
Asn Lys Phe Lys Thr Cys Val Ala Tyr Gly Pro Trp Asn Ser Arg Glu
                165                 170                 175
Ala Ser Ser Gly Tyr Thr Pro Ser Ala Trp Arg Arg Gly His Gln Val
            180                 185                 190
Asn Phe Gly Glu Ile Phe Glu Lys Ala Asn Asp Phe Asn Lys Ile Asn
        195                 200                 205
Trp Gly Thr Gln Ala Gly Pro Ser Ser Glu Asp Asp Gly Ile Ser Phe
    210                 215                 220
Ser Asn Glu Thr Pro Gly Ala Gly Pro Ala Ala Ala Pro Ser Pro Thr
225                 230                 235                 240
Pro Ser Ser Ile Pro Val Ile Asn Val Asn Val Asn Val Gly Gly Thr
                245                 250                 255
Asn Val Asn Ile Arg Asp Thr Asn Val Asn Thr Thr Asn Thr Thr Pro
            260                 265                 270
Thr Thr Gln Ser Thr Asp Ala Ser Thr Asp Thr Ser Asp Ile Asp Asn
        275                 280                 285
Ile Asn Thr Asn Asn Gln Thr Asp Asp Ile Asn Thr Thr Asp Lys Asp
    290                 295                 300
Ser Asp Gly Ala Gly Gly Val Asn Gly Asp Ile Ser Glu Thr Glu Ser
305                 310                 315                 320
Ser Ser Gly Asp Asp Ser Gly Ser Val Ser Ser Ser Glu Ser Asp Lys
                325                 330                 335
Asn Ala Ser Val Gly Asn Asp Gly Pro Ala Met Lys Asp Ile Leu Ser
            340                 345                 350
Ala Val Arg Lys His Leu Asp Val Val Tyr Pro Gly Asp Asn Gly Gly
        355                 360                 365
Ser Thr Glu Gly Pro Leu Gln Ala Asn Gln Thr Leu Gly Asp Ile Val
    370                 375                 380
Gln Asp Met Glu Thr Thr Gly Thr Ser Gln Glu Thr Val Val Ser Pro
385                 390                 395                 400
Trp Lys Gly Ser Thr Ser Ser Thr Gly Ser Ala Gly Gly Ser Gly Ser
                405                 410                 415
Val Gln Thr Leu Leu Pro Ser Pro Pro Pro Thr Pro Ser Thr Thr Thr
            420                 425                 430
Leu Arg Thr Gly Thr Gly Ala Thr Thr Thr Ser Leu Met Met Gly Gly
        435                 440                 445
Pro Ile Lys Ala Asp Ile Ile Thr Thr Gly Gly Gly Gly Arg Ile Pro
    450                 455                 460
Gly Gly Gly Thr Leu Glu Lys Leu Leu Pro Arg Ile Arg Ala His Leu
465                 470                 475                 480
Asp Ile Ser Phe Asp Gly Gln Gly Asp Leu Val Ser Thr Glu Glu Pro
                485                 490                 495
Gln Leu Gly Ser Ile Val Asn Lys Phe Arg Lys Glu Thr Gly Ser Gly
            500                 505                 510
Gly Ile Val Ala Ser Val Glu Ser Ala Pro Gly Lys Pro Gly Ser Ala
        515                 520                 525
Gln Val Leu Thr Gly Thr Gly Gly Asp Lys Gly Asn Leu Phe Gln Ala
    530                 535                 540
Ala Ala Ala Val Thr Gln Ala Leu Gly Asn Val Ala Gly Lys Val Asn
545                 550                 555                 560
Leu Ala Ile Gln Gly Gln Lys Leu Ser Ser Leu Val Asn Asp Asp Gly
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                565                 570                 575
Lys Gly Ser Val Gly Arg Asp Leu Phe Gln Ala Ala Thr Gln Thr Thr
            580                 585                 590
Gln Ala Leu Ser Ser Leu Ile Asp Thr Val Gly
        595                 600
<210>1017
<211>134
<212>PRT
<213>Chlamydia trachomatis
<400>1017
Gly Ser Ser Val Leu Thr Arg Ser Pro Cys Pro Ser Lys Asp Met Ser
  1               5                  10                  15
Lys Cys Ala Arg Ile Arg Gly Ser Ser Phe Ser Asn Val Pro Pro Pro
            20                  25                  30
Gly Ile Arg Pro Pro Pro Pro Val Val Ile Met Ser Ala Leu Ile Gly
        35                  40                  45
Pro Pro Ile Ile Lys Asp Val Val Val Ala Pro Val Pro Val Leu Asn
    50                  55                  60
Val Val Val Asp Gly Val Gly Gly Gly Glu Gly Ser Ser Val Cys Thr
65                  70                  75                  80
Leu Pro Leu Pro Pro Ala Asp Pro Val Glu Glu Val Leu Pro Phe His
                85                  90                  95
Gly Asp Thr Thr Val Ser Trp Asp Val Pro Val Val Ser Ile Ser Trp
            100                 105                 110
Thr Ile Ser Pro Arg Val Trp Leu Ala Trp Arg Gly Pro Ser Val Glu
        115                 120                 125
Pro Pro Leu Ser Pro Gly
    130
<210>1018
<211>323
<212>PRT
<213>Chlamydia trachomatis
<400>1018
Phe Val Val Met Thr Asn Ser Ile Ser Gly Asp Gln Pro Thr Val Thr
  1               5                  10                  15
Thr Phe Thr Ser Ser Thr Thr Ser Ala Ser Gly Ala Ser Gly Ser Leu
            20                  25                  30
Gly Ala Ser Ser Val Ser Thr Thr Ala Asn Ala Thr Val Thr Gln Thr
        35                  40                  45
Ala Asn Ala Thr Asn Ser Ala Ala Thr Ser Ser Ile Gln Thr Thr Gly
    50                  55                  60
Glu Thr Val Val Asn Tyr Thr Asn Ser Ala Ser Ala Pro Thr Val Thr
65                  70                  75                  80
Val Ser Thr Ser Ser Ser Ser Thr Gln Ala Thr Ala Thr Ser Asn Lys
                85                  90                  95
Thr Ser Gln Ala Val Ala Gly Lys Ile Thr Ser Pro Asp Thr Ser Glu
            100                 105                 110
Ser Ser Glu Thr Ser Ser Thr Ser Ser Ser Asp His Ile Pro Ser Asp
        115                 120                 125
Tyr Glu Pro Ile Ser Thr Thr Glu Asn Ile Tyr Glu Asn Ile Tyr Glu
    130                 135                 140
Ser Ile Asp Asp Ser Ser Thr Ser Gly Pro Glu Asn Thr Ser Gly Gly
145                 150                 155                 160
Ala Ala Ala Leu Asn Ser Leu Arg Gly Ser Ser Tyr Ser Asn Tyr Asp
                165                 170                 175
Asp Ala Ala Ala Asp Tyr Glu Pro Ile Ser Thr Thr Glu Asn Ile Tyr
            180                 185                 190
Glu Ser Ile Asp Asp Ser Ser Thr Ser Asp Pro Glu Asn Thr Ser Gly
        195                 200                 205
Gly Ala Ala Ala Leu Asn Ser Leu Arg Gly Ser Ser Tyr Ser Asn Tyr
    210                 215                 220
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09084.6200.00

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Asp Asp Ala Ala Ala Asp Tyr Glu Pro Ile Ser Thr Thr Glu Asn Ile
225                 230                 235                 240
Tyr Glu Asn Ile Tyr Glu Ser Ile Asp Asp Ser Ser Thr Ser Gly Pro
                245                 250                 255
Glu Asn Thr Ser Gly Gly Ala Ala Ala Leu Asn Ser Leu Arg Gly Ser
            260                 265                 270
Ser Tyr Ser Asn Tyr Asp Asp Ala Ala Ala Asp Tyr Glu Pro Ile Ser
        275                 280                 285
Thr Thr Glu Ser Ile Tyr Glu Asn Ile Tyr Glu Ser Ile Asp Gly Ser
    290                 295                 300
Ser Ile Ser Asp Pro Glu Asn Thr Ser Gly Gly Ala Ala Ala Ala Leu
305                 310                 315                 320
Asn Ser Leu
```

<210>1019
<211>426
<212>PRT
<213>Chlamydia trachomatis
<400>1019

```
Met Pro Gly Ile Lys Val Phe Gly Glu Thr Val Leu Arg Gly Ser Val
  1               5                  10                  15
Arg Val Ser Gly Ala Lys Asn Ala Thr Thr Lys Leu Leu Val Ala Ser
             20                  25                  30
Leu Leu Ser Asp Gln Arg Thr Ile Leu Lys Asn Val Pro Asn Ile Glu
         35                  40                  45
Asp Val Arg Gln Thr Val Asp Leu Cys Arg Val Leu Gly Ala Ile Val
     50                  55                  60
Glu Trp Asp Gln Gln Ala Gln Val Ile Glu Ile His Thr Pro Arg Ile
 65                  70                  75                  80
Leu Leu Ser Lys Val Pro Pro Gln Phe Ser Cys Val Asn Arg Ile Pro
                 85                  90                  95
Ile Leu Leu Leu Gly Ala Leu Leu Arg Arg Cys Pro Tyr Gly Ile Phe
            100                 105                 110
Val Pro Ile Leu Gly Gly Asp Ala Ile Gly Pro Arg Thr Leu His Phe
        115                 120                 125
His Leu Glu Gly Leu Lys Lys Leu Gly Ala Glu Ile Val Ile Ser Asp
    130                 135                 140
Glu Gly Tyr Trp Ala Ser Ala Pro Asn Gly Leu Val Gly Ala His Ile
145                 150                 155                 160
Thr Leu Pro Tyr Pro Ser Val Gly Ala Thr Glu Asn Leu Ile Leu Ala
                165                 170                 175
Ser Val Gly Ala Gln Gly Arg Thr Ile Ile Lys Asn Ala Ala Leu Glu
            180                 185                 190
Val Glu Ile Ile Asp Leu Ile Val Phe Leu Gln Lys Ala Gly Val Glu
        195                 200                 205
Ile Thr Thr Asp Asn Asp Lys Thr Ile Glu Ile Phe Gly Cys Gln Asp
    210                 215                 220
Phe Tyr Ser Val Glu His Phe Ile Ile Pro Asp Lys Ile Glu Ala Ala
225                 230                 235                 240
Ser Phe Gly Met Ala Ala Val Val Ser Gln Gly Arg Ile Phe Val Glu
                245                 250                 255
Gln Ala Arg His Glu His Met Ile Pro Phe Leu Lys Val Leu Arg Ser
            260                 265                 270
Ile Gly Gly Gly Phe Ser Val His Glu Asn Gly Ile Glu Phe Phe Tyr
        275                 280                 285
Asp Lys Pro Leu Lys Gly Gly Val Leu Leu Glu Thr Asp Val His Pro
    290                 295                 300
Gly Phe Ile Thr Asp Trp Gln Gln Pro Phe Ala Val Leu Leu Ser Gln
305                 310                 315                 320
Ser Glu Gly Cys Ser Val Ile His Glu Thr Val His Glu Asn Arg Leu
                325                 330                 335
```

Sequence Listing

Gly Tyr Leu Lys Gly Leu Val Lys Met Gly Ala His Cys Asp Leu Phe
340 345 350
His Glu Cys Leu Ser Ala Lys Ser Cys Arg Tyr Ser Thr Gly Asn His
355 360 365
Pro His Ser Ala Val Ile His Gly Pro Thr Pro Leu Gln Ala Thr Asp
370 375 380
Leu Val Ile Pro Asp Leu Arg Ala Gly Phe Ala Tyr Val Met Ala Ala
385 390 395 400
Leu Ile Ala Glu Ala Glu Pro His Gly Leu Arg Ile Pro Arg Cys Trp
405 410 415
Ile Glu Gly Thr Leu Ile Gly Glu Gly Asn
420 425

<210>1020
<211>209
<212>PRT
<213>Chlamydia trachomatis
<400>1020
Trp Arg Ile Gln Leu Arg Asn Asn Arg Cys Arg Ser Tyr Ala Tyr Arg
1 5 10 15
Ile Gln Gln Asp Gln Ala Asp Arg Ile Leu Ile Val Thr Asp Ser Gly
20 25 30
Gln Ser Leu His Phe Gln Leu Leu Glu Ala Thr Cys Leu Ala Ala Gly
35 40 45
Tyr Leu Pro Ser Lys Gly Ile Phe Ser His Val Gly Phe Gly Leu Val
50 55 60
Leu Asp Thr Gln Gly Arg Lys Phe Lys Thr Arg Ser Gly Glu Asn Ile
65 70 75 80
Lys Leu Arg Glu Leu Leu Asp Thr Ala Val Glu Lys Ala Lys Glu Ser
85 90 95
Leu Lys Ala His Arg Pro Asp Ile Ser Glu Glu Glu Leu Ala Tyr Gln
100 105 110
Gly Pro Ile Leu Gly Ile Asn Ala Ile Lys Tyr Ala Asp Leu Ser Ser
115 120 125
His Arg Ile Asn Asp Tyr Val Phe Ser Phe Glu Lys Met Leu Arg Phe
130 135 140
Glu Gly Asn Thr Ala Met Ser Leu Leu Tyr Ala Tyr Val Arg Ile Gln
145 150 155 160
Gly Ile Lys Arg Arg Met Gly Leu Glu Ser Leu Pro Gln Glu Gly Pro
165 170 175
Leu Ala Ile His Glu Pro Ala Glu Glu Ala Leu Xaa Leu Leu Phe Tyr
180 185 190
Val Ser Leu Lys Phe Trp Thr Ser Pro Ser Glu Asn Ser Val Leu Xaa
195 200 205
Ser

<210>1021
<211>337
<212>PRT
<213>Chlamydia trachomatis
<400>1021
Met Thr Thr Leu Leu Ser Phe Leu Thr Ser Leu Cys Ser Ala Ala Ile
1 5 10 15
His Gln Ala Phe Pro Glu Leu Glu Glu Leu Thr Leu Asp Ile Thr Pro
20 25 30
Ser Thr Lys Glu His Phe Gly His Tyr Gln Cys Asn Asp Ala Met Lys
35 40 45
Leu Ala Arg Val Leu Arg Lys Ser Pro Arg Ala Ile Ala Glu Ser Ile
50 55 60
Val Ala His Ile Pro Pro Ala Pro Phe Ser Ser Ile Glu Ile Ala Gly
65 70 75 80
Ala Gly Phe Ile Asn Phe Thr Phe Ser Lys Glu Phe Leu Ala Ser Gln

```
                85                  90                  95
Leu Gln Thr Phe Ser Lys Glu Leu Ala Asn Gly Phe Arg Ala Ala Ser
            100                 105                 110
Pro Gln Lys Val Ile Ile Asp Phe Ser Ser Pro Asn Ile Ala Lys Asp
        115                 120                 125
Met His Val Gly His Leu Arg Ser Thr Ile Ile Gly Asp Cys Leu Ala
    130                 135                 140
Arg Cys Phe Ser Phe Val Gly His Asp Val Leu Arg Leu Asn His Ile
145                 150                 155                 160
Gly Asp Trp Gly Thr Ala Phe Gly Met Leu Ile Thr Tyr Leu Gln Glu
                165                 170                 175
Thr Ser Gln Glu Ala Ile His Gln Leu Glu Asp Leu Thr Ala Leu Tyr
            180                 185                 190
Lys Lys Ala His Ala Arg Phe Ala Glu Asp Ser Glu Phe Lys Lys Arg
        195                 200                 205
Ser Gln His Asn Val Val Ala Leu Gln Ser Gly Asp Ala Gln Ala Leu
    210                 215                 220
Ala Leu Trp Ile Gln Ile Cys Ser Val Ser Glu Lys Ser Phe Gln Thr
225                 230                 235                 240
Ile Tyr Ser Ile Leu Asp Val Glu Leu His Thr Arg Gly Glu Ser Phe
                245                 250                 255
Tyr Asn Pro Phe Leu Ala Glu Val Val Ala Asp Leu Glu Ser Lys Asn
            260                 265                 270
Leu Val Thr Leu Ser Asp Gly Ala Lys Cys Val Phe His Glu Ala Phe
        275                 280                 285
Ser Ile Pro Leu Met Ile Gln Lys Ser Asp Gly Gly Tyr Asn Tyr Ala
    290                 295                 300
Thr Thr Asp Val Ala Ala Met Pro Ile Ala Ser Asn Lys Ile Arg Pro
305                 310                 315                 320
Ile Glu Phe Leu Ser Leu Gln Thr Gln Asp Asn Pro Tyr Thr Ser Ser
                325                 330                 335
Phe
```

<210>1022
<211>235
<212>PRT
<213>Chlamydia trachomatis
<400>1022

```
Phe Asp Asn Lys Pro Asn Ser Gly Glu Asn Pro Thr Phe Asp Thr Leu
  1               5                  10                  15
Pro Phe Asn Met Ile Phe Thr Ile Ala Lys Ser Leu Val Arg Leu Leu
             20                  25                  30
Phe Pro Leu Phe Tyr Arg Arg Lys Ile Leu Arg Ser Lys Ala Ser Ala
         35                  40                  45
Thr Val Lys Gly Ala Ala Ile Ile Ala Ala Asn His Val Ser Phe Leu
     50                  55                  60
Asp Pro Ile Ile Ile Pro Leu Ala Phe Pro Gly Lys Leu Tyr Gln Leu
 65                  70                  75                  80
Ala Lys Ser Gly Leu Phe Ser Asn Ser Phe Thr Asn Arg Leu Phe Arg
                85                  90                  95
Glu Leu Gly Cys Tyr Pro Ile Ser Arg Asn Ala Gly Asn Ala Ala Ala
            100                 105                 110
Phe Lys Ala Ala Leu Asn Ile Phe Ser His Gly Gly Arg Leu Ile Ile
        115                 120                 125
Tyr Pro Glu Gly Thr Arg His Ala Asp Gly Glu Ile His Gln Gly Lys
    130                 135                 140
Val Gly Val Gly Met Leu Ala Ile Lys Gly Asn Val Pro Val Ile Pro
145                 150                 155                 160
Val Tyr Val Ala Gly Thr Phe Glu Ala Phe Gly Lys Asn Gln Lys Phe
                165                 170                 175
Pro Lys Leu Trp Arg Thr Leu Thr Thr Val Ile Gly Ser Pro Ile Ser
```

Sequence Listing

```
            180                 185                 190
Phe Gln Asp Leu Ile Asp Asn Pro Ala Ile Asp Lys Lys Glu Ala Tyr
        195                 200                 205
Gln Leu Ala Thr Asp Arg Ile Met Thr Lys Ile Thr Glu Leu Arg Thr
    210                 215                 220
Trp Phe Gln Gln Gly Cys Ile Gly Glu Ile Pro
225                 230                 235
<210>1023
<211>216
<212>PRT
<213>Chlamydia trachomatis
<400>1023
Met Ile Ile Thr Ile Asp Gly Pro Ser Gly Thr Gly Lys Ser Thr Leu
  1               5                  10                  15
Ala Lys Ala Leu Ala Gln Thr Leu Gln Phe Leu Tyr Cys Asn Thr Gly
             20                  25                  30
Ala Met Tyr Arg Thr Leu Ala Tyr Ala Arg Leu Gln Pro Asp Trp Gln
         35                  40                  45
Glu Val Pro Leu Glu Asp Phe Leu Ala Ser Pro Pro Phe Ser Phe Ser
     50                  55                  60
Phe Ser Lys Asp Ser Pro Leu Gln Ala Phe Tyr Gly Asp Arg Leu Leu
 65                  70                  75                  80
Thr Ser Glu Leu Ser Ser Gln Glu Val Ala Asn Phe Ala Ser Leu Phe
                 85                  90                  95
Ser Lys Glu Pro Leu Val Arg Ala Tyr Met Gln Thr Leu Gln Lys Gln
            100                 105                 110
Tyr Ala Thr Val Gly Asn Cys Val Phe Glu Gly Arg Asp Met Gly Ser
        115                 120                 125
Lys Val Phe Pro His Ala Glu Val Lys Ile Phe Leu Thr Ala Lys Pro
    130                 135                 140
Glu Ile Arg Ala Glu Arg Arg Leu Lys Asp Leu Pro Gln Gly Ser Leu
145                 150                 155                 160
Pro Lys Glu Ala Leu Met Ala Glu Leu Ile Ala Arg Asp Gln Ala Asp
                165                 170                 175
Gln Gln Arg Glu Cys Asp Pro Leu Val Ile Pro Gln Asp Ala Ile Val
            180                 185                 190
Ile Asp Ser Ser Asp Leu Thr Ile Ser Gln Ile Leu Glu Lys Ile Leu
        195                 200                 205
Pro Leu Ile Pro Ser His Leu Thr
    210                 215
<210>1024
<211>305
<212>PRT
<213>Chlamydia trachomatis
<400>1024
Met Phe Asp Ser Asp His Asn Ser Ile Phe Gln Ser Asp Leu Cys Gln
  1               5                  10                  15
Arg Leu Val Val His Ser Ile Leu Leu Thr Phe Leu Val Ile Leu Leu
             20                  25                  30
Cys Thr Ser Leu Tyr Pro Ser Ser Ala Phe Ile Val Gly Leu Leu Ser
         35                  40                  45
Ser Ala Cys Ala Ala Leu Gly Thr Tyr Glu Met Gly Ala Met Val Arg
     50                  55                  60
Ile Lys Phe Pro Phe Ser Phe Thr Arg Tyr Ser Ala Leu Gly Ser Ala
 65                  70                  75                  80
Ile Phe Ile Ala Leu Thr Cys Leu Thr Ala Arg Cys Lys Met Tyr Phe
                 85                  90                  95
Pro Glu His Ile Asp Leu Leu Pro Trp Phe Phe Leu Phe Phe Trp Thr
            100                 105                 110
Ile Arg Leu Val Phe Lys Ser Arg His Tyr Lys Leu Gly Pro Ile Gly
        115                 120                 125
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09/544,142 - 05/20/2002

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Ser Thr Gly Leu Ala Leu Phe Cys Met Leu Tyr Val Ser Leu Pro Ile
    130                 135                 140
Arg Leu Phe Leu His Ile Leu Tyr Gly Phe Val His Thr Asp Thr Pro
145                 150                 155                 160
Phe Val Gly Ile Trp Trp Ala Ile Phe Leu Ile Ala Thr Thr Lys Ser
                165                 170                 175
Ser Asp Ile Phe Gly Tyr Phe Phe Gly Lys Ala Phe Gly Lys Lys Arg
            180                 185                 190
Ile Ala Pro Val Ile Ser Pro Asn Lys Thr Val Val Gly Phe Ile Ala
        195                 200                 205
Gly Cys Cys Gly Ser Ile Leu Val Ser Leu Leu Phe Tyr Ser His Leu
    210                 215                 220
Pro Lys Ala Phe Ala Asp Gln Ile Ala Val Pro Arg Ile Leu Val Ala
225                 230                 235                 240
Leu Gly Thr Val Leu Gly Val Ser Gly Phe Phe Gly Asp Ile Ile Glu
                245                 250                 255
Ser Thr Phe Lys Arg Asp Ala Gln Ile Lys Asn Ser Ser Asp Leu Glu
            260                 265                 270
Ser Ile Gly Gly Met Leu Asp Val Leu Asp Ser Leu Leu Leu Ser Thr
        275                 280                 285
Pro Ile Val Tyr Ala Ile Leu Leu Ile Thr Gln Asn Arg Thr Phe Leu
    290                 295                 300
Gly
305
<210>1025
<211>168
<212>PRT
<213>Chlamydia trachomatis
<400>1025
Ile Glu Ile Gly Ser Arg Arg Ile Ile Phe Phe Ile Gln Leu Ala Val
  1               5                  10                  15
Ala Gln Xaa Leu Ser Phe Leu His Asp Arg Glu Ile Arg Leu Arg Cys
             20                  25                  30
Ile Gly Asp Leu Ser Lys Leu Pro Gln Glu Leu Gln Asn Asn Ile Glu
         35                  40                  45
Gln Ala Ser Ser Ala Thr Ala His Tyr Ser Arg Met Glu Leu Ile Phe
     50                  55                  60
Ala Ile Asn Tyr Gly Ser Lys Asp Glu Leu Val Arg Ala Phe Lys Glu
 65                  70                  75                  80
Leu His Gln Asp Leu Ala Ser Lys Lys Ile Ser Val Asn Asp Ile Ser
                85                  90                  95
Glu Glu Leu Ile Ser Ser Tyr Leu Asp Thr Ser Gly Leu Pro Asp Pro
            100                 105                 110
Asp Leu Leu Ile Arg Thr Gly Gly Glu Met Arg Val Ser Asn Phe Leu
        115                 120                 125
Leu Trp Gln Ile Ala Tyr Thr Glu Leu Tyr Val Thr Asp Val Leu Trp
    130                 135                 140
Pro Asp Phe Thr Ala Asn Asp Leu Leu Glu Ala Ile Lys Thr Tyr Gln
145                 150                 155                 160
Gln Arg Ser Arg Arg Gly Gly Lys
                165
<210>1026
<211>106
<212>PRT
<213>Chlamydia trachomatis
<400>1026
Thr Ile Leu Ser Glu Thr Cys Tyr Ile Trp Pro Pro Ser Gly Ala Asp
  1               5                  10                  15
Ser Ile Pro Gln Ile Val Asp Thr Ala Leu His Leu Gly Val Glu Ala
             20                  25                  30
Leu Thr Leu Phe Ala Phe Ser Thr Glu Asn Phe Ser Arg Ser Lys Ser
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          35                  40                  45
Glu Val Ala Glu Leu Phe Ser Leu Phe Asn Ser Gln Leu Arg Arg Xaa
      50                  55                  60
Ser Leu Ser Tyr Met Ile Gly Arg Ser Asp Tyr Gly Val Leu Ala Thr
 65                  70                  75                  80
Tyr Arg Asn Phe Leu Lys Asn Tyr Lys Thr Thr Leu Ser Lys Pro Pro
                 85                  90                  95
Pro Arg Gln Leu Ile Thr Pro Ala Trp Ser
            100                 105
<210>1027
<211>111
<212>PRT
<213>Chlamydia trachomatis
<400>1027
Asp Met Lys Leu Pro Glu Val Ser Phe Ser Leu Pro Thr Ala Val Trp
  1               5                  10                  15
Ala Ser Ser Thr Lys Arg Leu Ser Gln Glu Lys Glu Phe Ser Ser Leu
            20                  25                  30
Asp Arg Val Gln Ser Met Asn Trp Val Gln Arg Ile Val Pro Ser Leu
          35                  40                  45
Ile Val Leu Leu Gly Ile Ser Val Leu Gly Cys Ser Val Leu Ala Phe
      50                  55                  60
Cys Thr Cys Leu Thr Val Leu Pro Gly Leu Gly Leu Val Ile Leu Gly
 65                  70                  75                  80
Ser Leu Leu Leu Tyr Trp Ala Tyr His Gln Ile Ala Asn Met Arg Val
                 85                  90                  95
Arg Met Ala Leu Ser Phe Glu Ala Ser Ser Glu Ala Pro Ile Gln
            100                 105                 110
<210>1028
<211>1250
<212>PRT
<213>Chlamydia trachomatis
<400>1028
Xaa Xaa Xaa Trp Thr Arg Gly Ser Gln Asp Tyr Arg Xaa Phe Thr Arg
  1               5                  10                  15
Gln Val Ser Asp Ala Arg Asn Asp Leu Thr Leu Arg Val Ala Lys Ile
            20                  25                  30
Leu Ser Thr Leu Lys Leu Arg Gly Asp Ile Lys Xaa His Pro Ser Ile
          35                  40                  45
Pro Gly Ile Val Asn Val His Phe Pro Leu Ala Glu Asp Ala Ala Leu
      50                  55                  60
Phe Ile Asp Asn Val Val His Gly Glu Pro Ser Val Pro Val Lys Ser
 65                  70                  75                  80
Ala Arg Leu Tyr Val Val Gly Ser Ser Glu Phe Thr Gly Glu Thr Val
                 85                  90                  95
Val Gln Ile Ser Gly Ser Leu Val Thr Ser Leu Thr Glu Glu Asp Leu
            100                 105                 110
Ser Phe Val Ser Tyr Glu Asp Lys Asp Val Thr Val Ser Gln Glu Leu
        115                 120                 125
Glu Asn Leu Ala Thr Asn Leu Phe Ile Glu Ser Glu Arg Pro Cys Glu
    130                 135                 140
Cys Gly Tyr Tyr Ser Leu Trp Asp Ser Met Pro Ile Glu Lys Val Ile
145                 150                 155                 160
His Val Thr Arg Asn Ile Cys Ser Gly Leu Arg Leu Leu Pro Thr Arg
                165                 170                 175
Lys Thr Gln Val Phe Leu Ser Arg Cys Leu Gly Thr Glu Arg Asp Phe
            180                 185                 190
Thr Ala Phe Leu Ala Arg Leu Glu Lys Ala Leu Gln His Glu Glu Val
        195                 200                 205
Lys Glu Ala Arg Glu Glu Leu Lys Asp Ala Ser Tyr Leu Leu His Ser
    210                 215                 220
```

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Arg Asn Leu Arg Trp Asn Ser Ile Ser Pro Lys Val Val Gly Asn Val
225 230 235 240
Val Asp Cys Ser Glu Leu Ser Pro Cys Phe Ser Ser Met Ser Leu Thr
245 250 255
Ala Asp Gly Lys Leu Leu Phe His Phe Asp Ala Glu Val Ala Ala Asn
260 265 270
Arg Gln Gln Leu Val Gly Asn Glu Arg Leu Asp Leu Glu Arg Leu Phe
275 280 285
Ala Met Glu Lys Gln His Ile Ala Thr Arg Leu Asn Arg Ser Val Glu
290 295 300
Glu Thr Glu Phe Gly Phe Ala Val Arg Leu Arg Asp Glu Ala Ala Ser
305 310 315 320
Gly Lys Ile Val Leu Gln Gly His Arg Val Cys Gln Arg Ile Val Glu
325 330 335
His Leu Thr Ala Leu Val Leu Asn Arg Pro Leu Ala Glu Thr Cys Asp
340 345 350
Leu Ser Thr Glu Asn Phe Pro Val Tyr Gly Arg Glu Pro Leu Asp Ser
355 360 365
Asp Ala Leu Gly Cys Phe Ile Phe Ser Pro Glu Arg Ser Cys Arg His
370 375 380
Phe Ser Lys Gly Ser Val Tyr Ile Val Phe Lys Gly Leu Arg Ser Ile
385 390 395 400
Val Ala Lys Tyr Glu His Ala Gly Ala Glu Glu Ala Ala Leu Leu Gln
405 410 415
His Asp Leu Gln Asn Leu Tyr Ala Cys Phe Ile His Thr Asp Ala Val
420 425 430
Ser Trp Ser Leu Gly Glu Asp Arg Val Leu Glu Ile Lys Glu Pro Leu
435 440 445
Gln Arg Val Ile Arg Ile Trp Gly Glu Glu Phe Val Gln Ser Phe Gly
450 455 460
Lys Ala Ser Leu Glu Val Arg Asp Val Arg Asp Arg Leu Ala Val Val
465 470 475 480
Asn Arg Ile Glu Lys Thr Gln His Ala Glu Leu Val Arg Trp Asp Glu
485 490 495
Gln Tyr Arg Gln Ala Gln Cys Ser Met Asn Pro Gln Val Arg Leu Arg
500 505 510
Ala Ala Ile Pro His Lys Asn Val Phe Phe Glu Asn Leu Lys Leu Asn
515 520 525
Ile Arg Lys Tyr Ser Arg Gly Glu His Val Leu Arg Phe Gly Thr Asp
530 535 540
Phe Val Gly Gly Lys Gln Ile Arg Ile Ala Phe Arg Asp His Gln Gly
545 550 555 560
Asn Leu Leu Thr Asp Lys Ala Gly Ile Asp Lys Val Ser Asp Glu Leu
565 570 575
Tyr Ala Arg Leu Asn Lys Leu Gly Val Ser Glu Val Gly Met Gln Arg
580 585 590
Glu Gly Asp His Ile Gln Val Ser Val Pro Gly Ala Ala Gly Ile Ser
595 600 605
Ser Ala Asp Ile Leu Gly Thr Ser Lys Met Ser Phe His Val Val Asn
610 615 620
Glu Gln Phe Ser Ser Arg Ser Pro Leu Arg Tyr Glu Val Gln Thr Phe
625 630 635 640
Leu Asp Tyr Leu Trp Phe Thr Ala Arg Ser Leu Asp Glu Cys Ser Pro
645 650 655
Gln Ala Ile Asn Arg Leu Ala Gly Ala Leu Phe His Gly Asp Asn Gly
660 665 670
Ser Ala Pro Ala Asn Val Arg Val Ala Val Glu Lys Leu Arg Glu Ala
675 680 685
Gly Leu Ser Phe Ser Lys Glu Leu Glu Gly Gly Ser Ala Ser Leu Asp
690 695 700
Thr Gln Tyr Ser Met Ile Ala Ile Glu Lys Glu Ser Arg Glu Gln Val

SEQUENCE LISTING

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705                 710                 715                 720
Asn Pro Leu Met Ile Val Phe Arg Asn His Ala Leu Glu Gly Ala Ser
                725                 730                 735
Leu Lys Asn Ile Arg Pro Glu Phe Ala Val Gly Glu Gly Tyr Val Leu
            740                 745                 750
Asn Phe Gly Val Lys Asp Lys Ala Thr Phe Ser Asp Gly Arg Glu Thr
        755                 760                 765
Pro Val Gln Gln Phe His Ala Trp Thr Ser Lys Phe Cys Gln Glu Gly
    770                 775                 780
Val Ser Gly Thr Lys Asn Gly Leu Phe Ser Gly Gly Arg Gly Trp Arg
785                 790                 795                 800
Met Ala Val Val Leu Asp Gly Tyr Val Ile Ser Asp Pro Val Leu Asn
                805                 810                 815
Val Pro Leu Lys Asp His Ala Ser Val Ser Gly Xaa Phe Ser Tyr Arg
            820                 825                 830
Glu Val His Arg Leu Ala Thr Asp Leu Lys Ser Gly Ala Met Ser Phe
        835                 840                 845
Ile Pro Glu Ile Leu Ser Glu Glu Val Val Ser Pro Glu Leu Gly Ser
    850                 855                 860
Ser Gln Arg Val Gln Gly Ile Leu Ser Val Val Leu Gly Leu Val Val
865                 870                 875                 880
Leu Ile Val Leu Met Ser Val Tyr Tyr Arg Phe Gly Gly Val Ile Ala
                885                 890                 895
Ser Ile Ala Val Leu Leu Asn Leu Leu Leu Ile Trp Ala Ser Met Gln
            900                 905                 910
Tyr Leu Asp Ala Pro Leu Thr Leu Ser Gly Leu Ala Gly Ile Ile Leu
        915                 920                 925
Ala Met Gly Met Ala Val Asp Ala Asn Val Leu Val Phe Glu Arg Ile
    930                 935                 940
Arg Glu Glu Tyr Leu Leu Thr Arg Ser Leu Ser Glu Ser Val Glu Ala
945                 950                 955                 960
Gly Tyr Lys Lys Ala Phe Ser Ala Ile Phe Asp Ser Asn Leu Thr Thr
                965                 970                 975
Ile Leu Ala Ser Ala Leu Leu Leu Met Leu Asp Thr Gly Pro Ile Lys
            980                 985                 990
Gly Phe Ala Leu Thr Leu Ile Ile Gly Ile Phe Ser Ser Met Phe Thr
        995                 1000                1005
Ala Leu Phe Met Thr Lys Phe Phe Phe Val Ile Trp Val Gln Lys Thr
    1010                1015                1020
Arg Glu Thr Gln Leu His Met Met Asn Lys Phe Ile Gly Ile Lys His
1025                1030                1035                1040
Asn Phe Leu Lys Glu Cys Lys Arg Leu Trp Val Val Ser Gly Val Val
                1045                1050                1055
Leu Val Leu Gly Cys Val Gly Leu Gly Phe Gly Ala Trp Asp Ser Val
            1060                1065                1070
Phe Gly Met Asp Phe Lys Gly Gly Tyr Ala Leu Thr Leu Asp Ser Asp
        1075                1080                1085
Val Cys Glu Tyr Asn Pro Glu Gln Met Cys Ser Val Leu Arg Lys Arg
    1090                1095                1100
Phe Gln Gln Ile Gly Leu Ser Ser Arg Asp Tyr Arg Val Arg Arg Ala
1105                1110                1115                1120
Asp Ser Ser Gly Lys Val Lys Ile Tyr Leu Ser Gln Asn Ala Leu Asp
                1125                1130                1135
Arg Val Glu Gln Ile Glu Gly Ala Gly Ser Glu Gln Lys Gly Ser Asp
            1140                1145                1150
Tyr His Leu Ala Arg Val Leu Gln Val Leu Ser Asp Ser Gly Ser Ser
        1155                1160                1165
Thr Thr Ser Met Val Phe Asp Ala Ser Arg Gly Ser Trp Phe Lys Val
    1170                1175                1180
Ser Gly Gln Leu Ser Asn Lys Met Arg Thr Gln Ala Val Ile Ala Leu
1185                1190                1195                1200
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09252008 - HTWGS

Phe Gly Ala Leu Gly Ile Ile Leu Leu Tyr Val Ser Leu Arg Phe Glu
1205 1210 1215
Trp Arg Tyr Ala Phe Ser Ala Ile Cys Ala Leu Met His Asp Leu Leu
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Ala Thr Cys Ala Val Leu Val Ala Leu His Phe Phe Leu Gln Arg Ile
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Thr Asp
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Ile Ile Phe Asp Arg Ile Arg Glu Asp Arg Arg Glu Lys Leu Phe Thr
35 40 45
Pro Met Pro Ile Leu Ile Asn Asp Ala Leu Gln Lys Thr Leu Gly Arg
50 55 60
Thr Val Met Thr Thr Ala Thr Thr Leu Ser Val Leu Val Ile Leu Leu
65 70 75 80
Phe Val Gly Gly Gly Ser Ile Phe Asn Phe Ala Phe Ile Met Thr Val
85 90 95
Gly Ile Leu Leu Gly Thr Leu Ser Ser Leu Tyr Ile Ala Pro Pro Leu
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Leu Leu Phe Met Val Arg Lys Glu Glu Gln Asn Ser Leu Arg
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Gly Gly Ala Met Tyr Asn Glu Asp Ser Val Pro Asn Lys Ile Pro Thr
35 40 45
Val Ile Met Asn Ala Lys Leu Lys Ile Glu Pro Pro Pro Thr Asn Asn
50 55 60
Lys Met Thr Ser Thr Asp Arg Val Val Ala Val Val Ile Thr Val Arg
65 70 75 80
Pro Asn Val Phe Cys Asn Ala Ser Leu Ile Lys Ile Gly Ile Gly Val
85 90 95
Asn Ser Phe Ser Arg Arg Ser Ser Arg Ile Arg Ser Lys Ile Ile Asn
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Val Leu Phe Lys Glu Tyr Pro Ser Thr Val Ile Asn Ala Pro Ile Ala
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Cys Lys Ser Ile Cys Asn Ser Leu Gln Lys Glu Met
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20 25 30

Lys Ile Leu Lys Glu Phe His Leu His Pro Ala Ile Ala Gln Val Leu
35 40 45
Ile Ser Arg Gly Phe Gln Ser Ile Gln Glu Ile Arg Asp Phe Leu Tyr
50 55 60
Pro Gln Leu Ser Ser Leu His Ser Thr Ser Leu Phe Leu Asp Met Glu
65 70 75 80
Lys Ala Val Ala Arg Leu Leu Gln Ala Lys Ala Asn Asn Glu His Val
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100 105 110
Ile Val Glu Phe Leu Gln Ile Leu Gly Val Lys Thr Ser Tyr Cys
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Gln Asp Gly Ile Ser Leu Leu Ile Thr Val Asp Cys Gly Ile Thr Ala
35 40 45
Gly Lys Glu Val Gln Ala Ile Asn Lys Gln Gly Ile Asp Val Ile Val
50 55 60
Thr Asp His His Met Pro Thr Gly Lys Leu Pro His Cys Ile Ala Met
65 70 75 80
Leu Asn Pro Lys Leu Asp Lys Asn Pro Tyr Pro Asn Lys Glu Leu Thr
85 90 95
Gly Val Gly Val Ala Phe Lys Leu Val Cys Ala Thr Tyr Glu Glu Leu
100 105 110
Ile Gln Gln Asp Ala Ser Trp Lys Asp Lys Ile Asp Leu Leu Arg Phe
115 120 125
Leu Asp Leu Val Ser Leu Gly Thr Ile Ala Asp Val Gly Arg Leu Ser
130 135 140
Gly Glu Asn Arg Ile Leu Val Ser Tyr Gly Ile Lys Glu Ile Ala Lys
145 150 155 160
Gly Lys Arg Leu Gly Leu Lys Lys Leu Cys Ser Leu Ser Gly Val Asp
165 170 175
Lys Ser Glu Val Ser Ser Thr Asn Leu Gly Ile Arg Ile Thr Pro Lys
180 185 190
Leu Asn Ser Leu Gly Arg Leu Ala Asp Ser Ser Gln Gly Val Lys Leu
195 200 205
Leu Leu Ser Gln Asp Pro Lys Asn Ile Gly Thr Ile Val Ser Glu Leu
210 215 220
Ser Ala Val Asn Gln Glu Arg Gln Arg Ile Glu Ala Glu Val Leu Arg
225 230 235 240
Asp Val Glu Arg Ile Leu Ala Ala Asn Pro Lys Leu Thr Ala Gln Ser
245 250 255
Ala Ile Val Leu Ala Ser Pro Asn Trp His Ser Arg Val Ile Pro Ile
260 265 270
Ile Ser Ala Arg Leu Ala Arg Thr Tyr Asn Lys Pro Val Ala Ile Ile
275 280 285
Ala Leu Gln Asp Gly Ile Gly Lys Gly Ser Leu Arg Thr Ile Gly Ser
290 295 300
Phe Pro Leu Leu Gly Val Leu Arg Lys Cys Glu Ser Phe Phe Leu Ser
305 310 315 320
Tyr Gly Gly His Asp Phe Ala Ala Gly Leu Met Ile Lys Glu Asp Gln
325 330 335
Val Glu Gly Phe Arg Lys Lys Phe Ile His Leu Val Ser Ser Ser Leu
340 345 350

Sequence Listing

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Phe Ser Arg Ile Asn Arg Asp Leu Ile Ala Ser Met Glu Leu Leu Glu
    370                 375                 380
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385                 390                 395                 400
Gln Val Arg Tyr Pro Lys Leu Leu Ala Gly Asn His Val Lys Leu Tyr
                405                 410                 415
Leu Asn Ser Gly Glu Arg Asn Leu Glu Gly Thr Ala Phe Gly Gln Gly
            420                 425                 430
Asp Lys Ile Ser Leu Leu Lys Ala Asn Trp Asn Ile Pro Leu Asp Ile
        435                 440                 445
Ala Tyr Thr Leu Arg Ile Met Arg Arg Ser Ala Arg Gly Ala Ile Arg
    450                 455                 460
Leu Leu Ile Gln Asp Phe Arg Ile Gln Ile Pro Arg Leu
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             20                  25                  30
Ala Val Pro Val Thr Ser Gln Arg Val Ser Ile Thr Gln Ala Ala Lys
         35                  40                  45
Leu His Asn Val Thr Arg Gln Ala Ile Tyr Val Ala Ile Lys Gln Lys
     50                  55                  60
Lys Leu Lys Ala Ser Lys Thr Thr Arg Trp Glu Ile Asp Leu Gln Asp
 65                  70                  75                  80
Leu Glu Asp Tyr Arg Arg Asn Arg Tyr Ser Arg Ala Lys Ser Thr Tyr
                85                  90                  95
Gln Gly Glu Leu Leu Phe Asp Asn Glu Lys Gly Phe Tyr Ser Val Gly
            100                 105                 110
Gln Val Ala Ser Met Leu Asp Val Pro Glu Gln Lys Ile Tyr Tyr Ala
        115                 120                 125
Thr Arg Ile Gly Ala Met Lys Gly Glu Arg Arg Gly Ser Ala Trp Val
    130                 135                 140
Ile His Val Ser Glu Val Asp Arg Tyr Arg Asn Asp Tyr Leu Lys Lys
145                 150                 155                 160
Glu Ala Glu Arg Lys Gly Lys Ser Leu Ala Ala Met Arg Glu Gly Phe
                165                 170                 175
Glu Ala Leu Gly Ala Asp Leu Leu Ala Asp Ala Glu Asn Phe Ile Ser
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             20                  25                  30
Ala Arg Lys Tyr Asn Gly Gln Met Ile Leu Arg Ile Glu Asp Thr Asp
         35                  40                  45
Gln Thr Arg Ser Arg Asp Asp Tyr Glu Ala Asn Ile Phe Leu Ala Leu
     50                  55                  60
Lys Trp Cys Gly Ile Arg Trp Asp Glu Gly Pro Asp Val Gly Gly Ala
 65                  70                  75                  80
Tyr Gly Pro Tyr Arg Gln Ser Glu Arg Thr Glu Ile Tyr Lys Lys Tyr
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                85                  90                  95
Ala Glu Ile Leu Leu Gln Thr Asp Cys Ala Tyr Lys Cys Phe Ala Thr
            100                 105                 110
Pro Gln Glu Leu Gln Glu Met Arg Ala Val Ala Ser Thr Leu Gly Tyr
        115                 120                 125
Arg Gly Gly Tyr Asp Arg Arg Tyr Arg Tyr Leu Ser Pro Glu Glu Val
    130                 135                 140
Arg Gln Arg Glu Glu Gln Gly Gln Pro Tyr Thr Ile Arg Leu Lys Val
145                 150                 155                 160
Pro Leu Thr Gly Glu Ser Val Phe Glu Asp Gln Cys Lys Gly Arg Val
                165                 170                 175
Val Phe Pro Trp Ala Asp Val Asp Asp Gln Val Leu Val Lys Ser Asp
            180                 185                 190
Gly Phe Pro Thr Tyr His Phe Ala Asn Val Val Asp Asp His Leu Met
        195                 200                 205
Gly Ile Thr His Val Leu Arg Gly Glu Glu Trp Leu Ser Ser Thr Pro
    210                 215                 220
Lys His Leu Leu Leu Tyr Lys Ala Phe Gly Trp Glu Pro Pro Gln Phe
225                 230                 235                 240
Phe His Met Pro Leu Leu Leu Asn Pro Asp Gly Ser Lys Leu Ser Lys
                245                 250                 255
Arg Lys Asn Pro Thr Ser Ile Phe Tyr Tyr Arg Asp Ala Gly Tyr Lys
            260                 265                 270
Lys Glu Ala Phe Met Asn Phe Leu Thr Leu Met Gly Tyr Ser Met Glu
        275                 280                 285
Gly Asp Glu Glu Ile Tyr Ser Met Gln Arg Leu Ile Glu Ala Phe Asp
    290                 295                 300
Pro Lys Arg Ile Gly Arg Ser Gly Ala Val Phe Asp Ile Arg Lys Leu
305                 310                 315                 320
Asp Trp Met Asn Lys His Tyr Leu Asn His Glu Gly Ser Pro Glu Ser
                325                 330                 335
Leu Leu Gln Glu Leu Lys Gly Trp Leu Trp Asn Asp Glu Phe Leu Leu
            340                 345                 350
Lys Ile Leu Pro Leu Cys Gln Ser Arg Ile Thr Thr Leu Ala Asp Phe
        355                 360                 365
Val Gly Leu Thr Ser Phe Phe Phe Thr Ala Ile Pro Gln Tyr Ser Lys
    370                 375                 380
Glu Glu Leu Leu Pro Ser Ser Leu Lys Gln Glu Gln Ala Ala Val Met
385                 390                 395                 400
Leu Tyr Ser Leu Val Lys Tyr Leu Glu Lys Lys Asp Leu Trp Glu Lys
                405                 410                 415
Asp Phe Phe Tyr Gln Gly Ser Lys Trp Leu Ala Glu Ala Phe Gln Val
            420                 425                 430
His His Lys Lys Ala Val Ile Leu Cys Tyr Met Trp Leu Leu Leu Val
        435                 440                 445
Gln Asn Arg Asp Phe Leu Phe Leu Ile Arg Trp Asn Tyr
    450                 455                 460
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<213>Chlamydia trachomatis
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            20                  25                  30
Pro Ile Gln Cys Ser Pro Cys Glu Ser Lys Lys Lys Asp Val Asp Gly
        35                  40                  45
Gly Cys Asn Ser Cys Asn Gly Tyr Val Pro Ala Cys Lys Pro Cys Gly
    50                  55                  60
Gly Asp Thr His Gln Asp Ala Glu His Gly Pro Gln Ala Arg Glu Ile
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20 25 30
Glu Thr Ser Met Ala Glu Phe Ile Ser Thr Asn Val Ile Ser Leu Ala
35 40 45
Asp Thr Lys Ala Lys Asp Asn Thr Ser His Lys Ser Lys Lys Ala Arg
50 55 60
Lys Asn His Ser Lys Glu Thr Pro Val Asn Arg Lys Lys Val Ala Pro
65 70 75 80
Val His Glu Ser Lys Ala Thr Gly Pro Lys Gln Asp Ser Cys Phe Gly
85 90 95
Arg Met Tyr Thr Val Lys Val Asn Asp Asp Arg Asn Val Glu Ile Thr
100 105 110
Gln Ala Val Pro Lys Tyr Ala Thr Val Gly Ser Pro Tyr Pro Val Glu
115 120 125
Ile Thr Ala Thr Gly Lys Arg Asp Cys Val Asp Val Ile Ile Thr Gln
130 135 140
Gln Leu Pro Cys Glu Ala Glu Phe Val Arg Ser Asp Pro Ala Thr Thr
145 150 155 160
Pro Thr Ala Asp Gly Lys Leu Val Trp Lys Ile Asp Arg Leu Gly Gln
165 170 175
Gly Glu Lys Ser Lys Ile Thr Val Trp Val Lys Pro Leu Lys Glu Gly
180 185 190
Cys Cys Phe Thr Ala Ala Thr Val Cys Ala Cys Pro Glu Ile Arg Ser
195 200 205
Val Thr Lys Cys Gly Gln Pro Ala Ile Cys Val Lys Gln Glu Gly Pro
210 215 220
Glu Asn Ala Cys Leu Arg Cys Pro Val Val Tyr Lys Ile Asn Val Val
225 230 235 240
Asn Gln Gly Thr Ala Thr Ala Arg Asn Val Val Val Glu Asn Pro Val
245 250 255
Pro Asp Ser Tyr Ala His Ser Ser Gly Gln Arg Val Leu Thr Phe Thr
260 265 270
Leu Gly Asp Met Gln Pro Gly Glu His Arg Thr Ile Thr Val Glu Phe
275 280 285
Cys Pro Leu Lys Arg Gly Arg Ala Thr Asn Ile Ala Met Val Ser Tyr
290 295 300
Cys Gly Gly His Lys Asn Thr Ala Ser Val Thr Thr Val Ile Asn Glu
305 310 315 320
Pro Cys Val Gln Val Ser Ile Ala Gly Ala Asp Trp Ser Tyr Val Cys
325 330 335
Lys Pro Val Glu Tyr Val Ile Ser Val Ser Asn Pro Gly Asp Leu Val
340 345 350
Leu Arg Asp Val Val Val Lys Asp Thr Leu Ser Pro Gly Val Thr Val
355 360 365
Leu Glu Ala Ala Gly Ala Gln Ile Ser Cys Asn Lys Val Val Trp Thr
370 375 380
Val Lys Glu Leu Asn Pro Gly Glu Ser Leu Gln Tyr Lys Val Leu Val
385 390 395 400
Arg Ala Gln Thr Pro Gly Gln Phe Thr Asn Asn Val Val Val Lys Ser
405 410 415
Cys Ser Asp Cys Gly Thr Cys Thr Ser Cys Ala Glu Ala Thr Thr Tyr

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            420                 425                 430
Trp Lys Gly Val Ala Ala Thr His Met Cys Val Val Asp Thr Cys Asp
        435                 440                 445
Pro Val Cys Val Gly Glu Asn Thr Val Tyr Arg Ile Cys Val Thr Asn
    450                 455                 460
Arg Gly Ser Ala Glu Asp Thr Asn Val Ser Leu Met Leu Lys Phe Ser
465                 470                 475                 480
Lys Glu Leu Gln Pro Val Ser Phe Ser Gly Pro Thr Lys Gly Thr Ile
                485                 490                 495
Thr Gly Asn Thr Val Val Phe Asp Ser Leu Pro Arg Leu Gly Ser Lys
            500                 505                 510
Glu Thr Val Glu Phe Ser Val Thr Leu Lys Ala Val Ser Ala Gly Asp
        515                 520                 525
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Ser Asp Thr Glu Asn Thr His Ile Tyr
545                 550
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             20                  25                  30
Ile Ser Asn Leu Leu Ser Ser Thr Ala Phe Lys Val Gly Leu Val Val
         35                  40                  45
Ile Gly Leu Leu Leu Val Met Ala Thr Ile Phe Leu Val Ser Ala Ser
     50                  55                  60
Phe Val Cys Lys Ser His Leu Ser Ser Tyr Ser Cys Tyr Cys Gly Met
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Arg Glu Tyr Leu Arg Arg Asn Phe Ile His Gly Arg Ile Leu Phe Ser
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Gly Glu Met Glu Leu Met
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             20                  25                  30
Tyr Cys Ser Pro Glu Arg Trp Ser Leu Cys Lys Lys Ile Leu Lys Ala
         35                  40                  45
Ser Glu Asp Ile Ile Asp Asp Gly Gln Ile Asn Asn Ser Asn Lys Val
     50                  55                  60
Phe Thr Asp Glu Arg Leu Asn Ala Ile Asp Gly Val Val Val Ser Leu
 65                  70                  75                  80
Ser Arg Arg Asn Ser Leu Val Asp Gln Thr Gln
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Thr Val Asp Lys Leu Val Glu His His Ile Asp Thr Gln Gln Ile Ser
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Pro Tyr Ile Leu Ser Arg Ser Leu Glu Asp Tyr Val Arg Ser Phe Asp
        50                  55                  60                  His Lys Ala Tyr
Leu Thr Gln Asp Glu Val Phe Ser His Ala Phe
65                  70                  75                  80
Ser Glu Glu Ala Thr His Pro Leu Phe Lys Gln Tyr Gln Glu Asp Asn
                85                  90                  95
Phe Ser Ser Phe Lys Glu Leu Asp Thr Cys Ile Gln Gln Ser Ile Ser
            100                 105                 110
Arg Ala Arg Glu Trp Arg Ser Ser Trp Leu Thr Asp Ser Ile Arg Val
        115                 120                 125
Ile Gln Asp Ala Met Ser His Thr Ile Glu Lys Lys Pro Ser Ala Trp
    130                 135                 140
Ala Ser Ser Ile Glu Glu Val Lys Gln Arg Gln Tyr Asp Leu Leu Leu
145                 150                 155                 160
Ser Tyr Ala Ser Ile Tyr Leu Glu Asp Ala Ala Lys Asn Arg Tyr Gln
                165                 170                 175
Gly Lys Glu His Gly Leu Val Lys Leu Cys Ile Arg Gln Ile Glu Asn
            180                 185                 190
His Glu Asn Pro Tyr Ile Gly Ile Asn Asp His Gly Tyr Arg Met Ser
        195                 200                 205
Pro Glu Glu Glu Ala Asn Ser Phe His Val Arg Ile Ile Lys Ser Ile
    210                 215                 220
Ala His Ser Leu Asp Ala His Thr Ala Tyr Phe Ser Gln Glu Glu Ala
225                 230                 235                 240
Leu Ser Met Arg Ala Gln Leu Glu Lys Gly Met Cys Gly Ile Gly Val
                245                 250                 255
Val Leu Lys Glu Asp Ile Asp Gly Val Val Val Lys Glu Val Leu Ala
            260                 265                 270
Gly Gly Pro Ala Asp Lys Thr Gly Ser Leu Arg Val Gly Asp Ile Ile
        275                 280                 285
Tyr Arg Val Asn Gly Lys Asn Ile Glu Asn Thr Pro Phe Pro Gly Val
    290                 295                 300
Leu Asp Ser Leu Arg Gly Ser Pro Gly Ser Ser Val Thr Leu Asp Ile
305                 310                 315                 320
His Arg Gln Asn Asn Asp His Val Ile Gln Leu Arg Arg Glu Lys Ile
                325                 330                 335
Leu Leu Asp Ser Arg Arg Val Asp Val Ser Tyr Glu Pro Tyr Gly Asn
            340                 345                 350
Gly Ile Ile Gly Lys Ile Thr Leu His Ser Phe Tyr Glu Gly Glu Asn
        355                 360                 365
Gln Val Ser Ser Glu Gln Asp Leu Arg Lys Ala Ile Arg Glu Leu Gln
    370                 375                 380
Glu Lys Asn Leu Leu Gly Leu Val Leu Asp Ile Arg Glu Asn Thr Gly
385                 390                 395                 400
Gly Phe Leu Ser Gln Ala Ile Lys Val Ser Gly Leu Phe Leu Thr Asn
                405                 410                 415
Gly Val Val Val Val Ser Arg Tyr Ala Asp Gly Ser Val Lys Arg Tyr
            420                 425                 430
Arg Thr Ile Ser Pro Gln Lys Phe Tyr Asp Gly Pro Leu Ala Val Leu
        435                 440                 445
Val Ser Lys Ser Ser Ala Ser Ala Ala Glu Ile Val Ala Gln Thr Leu
    450                 455                 460
Gln Asp Tyr Gly Val Ala Leu Ile Val Gly Asp Gln Gln Thr Tyr Gly
465                 470                 475                 480
Lys Gly Thr Ile Gln His Gln Thr Ile Thr Gly Ser Asn Ser Gln Glu
                485                 490                 495
Asp Phe Phe Lys Val Thr Val Gly Arg Tyr Tyr Ser Pro Ser Gly Lys
            500                 505                 510
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SEQUENCE LISTING

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Tyr Ala Glu Asp Lys Leu Gly Glu Arg Phe Leu Glu Tyr Ala Leu Pro
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545 550 555 560
Ile Asn Ile Arg Pro Trp Phe Gln Lys Tyr Tyr Ser Pro His Leu Gln
565 570 575
Lys Pro Glu Leu Val Trp Arg Glu Met Leu Pro Gln Leu Ala His Asn
580 585 590
Ser Gln Glu Arg Leu Glu Lys Asn Lys Asn Phe Glu Ile Phe Val Gln
595 600 605
His Leu Lys Lys Thr Asn Lys Gln Asp Arg Ser Phe Gly Ser Asn Asp
610 615 620
Leu Gln Met Glu Glu Cys Glu His Arg
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35 40 45
Lys Lys Pro Asn Ser Ala Leu Arg Lys Val Ala Trp Val Arg Leu Ser
50 55 60
Asn Gly Gln Glu Val Ile Ala Tyr Ile Gly Gly Glu Gly His Asn Leu
65 70 75 80
Gln Glu His Ser Ile Val Leu Val Gln Gly Gly Arg Xaa Lys Asp Leu
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Pro Gly Val Arg Tyr His Ile Val Arg Gly Ala Leu Xaa Cys Ala Ala
100 105 110
Val Lys Asn Arg Lys Gln Ser Arg Ser Arg Tyr Gly Ala Lys Arg Pro
115 120 125
Lys

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20 25 30
Phe Glu Glu Ala Leu Glu Asn Ala Lys Pro Ile Leu Glu Val Arg Ser
35 40 45
Arg Arg Val Gly Gly Ala Thr Tyr Gln Val Pro Val Glu Val Ala Pro
50 55 60
Asp Arg Arg Ser Cys Leu Ala Met Gln Trp Ile Ile Lys His Ala Arg
65 70 75 80
Ser Lys Pro Gly Lys Cys Met Glu Val Gly Leu Ala Asn Glu Leu Ile
85 90 95
Asp Cys Phe Asn Lys Gln Gly Ala Thr Ile Lys Lys Arg Glu Asp Thr
100 105 110
His Arg Met Ala Glu Ala Asn Lys Ala Phe Ala His Tyr Lys Trp Xaa
115 120 125
Xaa Asn Val

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Thr Thr Thr Thr Glu Arg Ile Leu Phe Tyr Ala Gly Arg Thr His Lys
         35                  40                  45
Ile Gly Glu Val His Glu Gly Gly Ala Thr Met Asp Trp Met Glu Gln
     50                  55                  60
Glu Gln Glu Arg Gly Ile Thr Ile Thr Ser Ala Ala Thr Thr Val Phe
 65                  70                  75                  80
Trp Leu Gly Ala Lys Ile Asn Ile Ile Asp Thr Pro Gly His Val Asp
                 85                  90                  95
Phe Thr Ile Glu Val Glu Arg Ser Leu Arg Val Leu Asp Gly Ala Val
            100                 105                 110
Ala Val Phe Asp Ala Val Ser Gly Val Glu Pro Gln Ser Glu Thr Val
        115                 120                 125
Trp Arg Gln Ala Asn Lys Tyr Gly Val Pro Arg Ile Ala Phe Val Asn
    130                 135                 140
Lys Met Asp Arg Met Gly Ala Asn Tyr Xaa Gly Ala Val Glu Ser Met
145                 150                 155                 160
Arg Glu Lys Leu Gly Ala Asn Ala Xaa Pro Val His Cys Pro Ile Gly
                165                 170                 175
Ser Glu Ser Gln Phe Val Gly Met Val Asp Leu Ile Ser Gln Lys Ala
            180                 185                 190
Leu Tyr Phe Leu Glu Glu Thr Leu Gly Ala Lys Trp Glu Glu Arg Lys
        195                 200                 205
Ile Pro Glu Asp Leu Gln Glu Gln Cys Ala Thr Leu Arg Met Gln Leu
    210                 215                 220
Leu Glu Glu Leu Ala Thr Val Asp Glu Ser Asn Glu Ala Phe Met Glu
225                 230                 235                 240
Lys Val Leu Glu Asn Pro Asp Ser Ile Thr Glu Glu Glu Ile His Thr
                245                 250                 255
Val Met Arg Lys Gly Val Ile Glu Gly Lys Ile Asn Pro Val Leu Cys
            260                 265                 270
Gly Ser Ala Phe Lys Asn Lys Gly Val Gln Gln Leu Leu Asp Val Ile
        275                 280                 285
Val Lys Trp Leu Pro Ser Pro Leu Asp Arg Gly Asn Val Arg Gly Ile
    290                 295                 300
Asn Leu Lys Thr Gly Glu Glu Val Ser Leu Lys Pro Ser Lys Asp Gly
305                 310                 315                 320
Pro Leu Ala Ala Leu Ala Phe Lys Ile Met Thr Asp Pro Tyr Val Gly
                325                 330                 335
Arg Ile Thr Phe Ile Arg Ile Tyr Ser Gly Thr Leu Lys Lys Gly Ser
            340                 345                 350
Ala Ile Leu Asn Ser Thr Lys Asp Lys Lys Glu Arg Ile Ser Arg Leu
        355                 360                 365
Leu Glu Met His Ala Asn Glu Arg Thr Asp Arg Asp Glu Phe Thr Val
    370                 375                 380
Gly Asp Ile Gly Ala Cys Val Gly Leu Lys Phe Ser Val Thr Gly Asp
385                 390                 395                 400
Thr Leu Cys Asp Glu Asn Gln Glu Ile Val Leu Glu Arg Ile Glu Ala
                405                 410                 415
Pro Glu Pro Val Ile Asp Met Ala Ile Glu Pro Lys Ser Lys Gly Asp
            420                 425                 430
Arg Glu Lys Leu Ala Gln Ala Leu Ser Ala Leu Ser Glu Glu Asp Pro
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09/529,149

09/754,738 - 12/28/2001

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        435                 440                 445
Thr Phe Arg Val Ser Thr Asn Glu Glu Thr Gly Gln Thr Ile Ile Ser
    450                 455                 460
Gly Met Gly Glu Leu His Leu Asp Ile Leu Arg Asp Arg Met Ile Arg
465                 470                 475                 480
Glu Phe Arg Val Glu Ala Asn Val Gly Lys Pro Gln Val Ser Tyr Lys
                485                 490                 495
Glu Thr Ile Thr Lys Thr Ser Asn Ser Glu Thr Lys Tyr Val Lys Gln
            500                 505                 510
Ser Gly Gly Arg Gly Gln Tyr Ala His Val Cys Leu Glu Ile Glu Pro
        515                 520                 525
Asn Glu Pro Gly Lys Gly Asn Glu Val Val Ser Lys Ile Val Gly Gly
    530                 535                 540
Val Ile Pro Lys Glu Tyr Ile Pro Ala Val Ile Lys Gly Val Glu Glu
545                 550                 555                 560
Gly Leu Asn Ser Gly Val Leu Ala Gly Tyr Gly Leu Val Asp Val Lys
                565                 570                 575
Val Ser Ile Val Phe Gly Ser Tyr His Glu Val Asp Ser Ser Glu Met
            580                 585                 590
Ala Phe Lys Ile Cys Gly Ser Met Ala Val Lys Glu Ala Cys Arg Lys
        595                 600                 605
Ala Leu Pro Val Ile Leu Glu Pro Ile Met Lys Val Thr Val Ile Thr
    610                 615                 620
Pro Glu Asp His Leu Gly Asp Val Ile Gly Asp Leu Asn Arg Arg Arg
625                 630                 635                 640
Gly Lys Ile Leu Gly Gln Glu Ser Ser Arg Asn Met Ala Gln Val Ser
                645                 650                 655
Ala Glu Val Pro Leu Ser Glu Met Phe Gly Tyr Met Thr Ser Leu Arg
            660                 665                 670
Ser Leu Thr Ser Gly Arg Ala Thr Ser Thr Met Glu Pro Ala Phe Phe
        675                 680                 685
Ala Lys Val Pro Gln Lys Ile Gln Glu Glu Ile Val Lys Lys
    690                 695                 700
<210>1043
<211>112
<212>PRT
<213>Chlamydia trachomatis
<400>1043
Leu Leu Arg Ser Lys Glu Tyr Met Lys Gln Gln Lys Gln Arg Ile Arg
  1                 5                  10                  15
Ile Arg Leu Lys Gly Phe Asp Gln Gly Gln Leu Asp Gln Ser Thr Ala
             20                  25                  30
Asn Ile Val Glu Thr Ala Lys Arg Thr Gly Ala Arg Val Val Gly Pro
         35                  40                  45
Ile Pro Leu Pro Thr Lys Arg Glu Val Tyr Thr Val Leu Arg Ser Pro
     50                  55                  60
His Val Asp Lys Lys Ser Arg Glu Gln Phe Glu Ile Arg Thr His Lys
 65                  70                  75                  80
Arg Leu Ile Asp Ile Leu Asp Pro Thr Gly Lys Thr Ile Asp Ala Leu
                 85                  90                  95
Lys Met Leu Ser Leu Pro Ala Gly Val Asp Ile Lys Ile Lys Ala Ala
            100                 105                 110
<210>1044
<211>299
<212>PRT
<213>Chlamydia trachomatis
<400>1044
Ile Leu Arg Ser Arg Leu Pro Asn Ser Phe Asp Leu Lys Met Ser Leu
  1                 5                  10                  15
Phe Ser Lys Phe Lys Ala Gln Trp Met Phe Leu His Ser Arg Glu Leu
             20                  25                  30
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09/754,252 - 09/754,252

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Cys Ser Ser Thr Ser Asp Ile Gly Asn Thr Cys Ser Asp Pro Val Phe
          35                  40                  45
Gln Ile Leu Cys Asn Pro Val Arg Ser Glu Ile Ser Tyr Lys Val Gly
      50                  55                  60
Asp Ser Leu Gly Val Phe Pro Thr Asn Pro Ser Thr Leu Val Asp Ser
 65                  70                  75                  80
Val Leu Asp Ala Leu Gln Tyr Gly Pro Arg Ser Pro Val Val Ser Arg
                 85                  90                  95
His Ala Asp Ser Val Leu Pro Leu His Glu Phe Leu Thr Ser Tyr Val
            100                 105                 110
Asp Leu Asp Lys Ile Pro Lys Ser Leu Arg Pro Phe Phe Pro Gly Asp
        115                 120                 125
Leu Asp Asp Thr Trp Ser Leu Ala Glu Ala Ile Leu Val Tyr Gln Pro
    130                 135                 140
Arg Ile Pro Phe Glu Glu Phe Ile Arg Ser Ala Met Pro Leu Leu Pro
145                 150                 155                 160
Arg Phe Tyr Ser Ile Ala Ser Ser Pro Thr Cys Ser His Gly Lys Leu
                165                 170                 175
Glu Leu Leu Val Arg Cys Val Ser Phe Gln Gly Lys Thr Gln Leu Arg
            180                 185                 190
Tyr Gly Leu Cys Ser Ala Phe Leu Cys Lys Asp Leu Gln Glu Gly Glu
        195                 200                 205
Ser Phe Arg Gly Phe Ile Gln Pro Thr Arg His Phe Thr Leu Glu Gln
    210                 215                 220
Lys Asn Phe Gly Lys Pro Leu Ile Met Ile Gly Ala Gly Thr Gly Ile
225                 230                 235                 240
Ala Pro Tyr Lys Gly Phe Leu Gln His Arg Ile Tyr His Gln Asp Val
                245                 250                 255
Gly Ser Asn Ile Leu Phe Phe Gly Glu Arg Phe Glu Lys Ser Asn Phe
            260                 265                 270
Tyr Tyr Arg Ala Phe Ser Pro Gly Ala Asp Arg Phe Arg Lys Thr Pro
        275                 280                 285
Val Ile His Ser Leu Phe Gln Arg Phe Arg Val
    290                 295
<210>1045
<211>102
<212>PRT
<213>Chlamydia trachomatis
<400>1045
Met Thr Glu Ile Pro Ser Ser Phe Val Leu Pro Asp Pro Glu Trp Ile
  1                   5                  10                  15
Tyr Arg Val Gly Ile Gly Gln Asp Ser His Arg Phe Leu Pro Asp Glu
             20                  25                  30
Asp Pro Lys Pro Cys Ile Leu Gly Gly Ile Ile Phe Glu Asn Thr Pro
         35                  40                  45
Gly Phe Glu Ala Asn Ser Asp Gly Asp Val Val Phe His Ala Ile Cys
     50                  55                  60
Asn Ala Phe Ser Ser Val Thr His Lys Gly Ile Leu Gly Gly Leu Ala
 65                  70                  75                  80
Asp Glu Leu Leu Lys Thr Lys Gly Ile Thr Asp Ser Val Val Tyr Leu
                 85                  90                  95
Gln Glu Leu Ser Pro Leu
            100
<210>1046
<211>507
<212>PRT
<213>Chlamydia trachomatis
<400>1046
Leu Gln Gly Leu Ile Ser Gly Gly Gly Asn Met Ala Ser Leu Leu Asp
  1                   5                  10                  15
Arg Tyr Leu Arg Asn Ile Ser Asp Lys Ser Gln Gln Asn Leu Ala Ser
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                20                  25                  30
Val Ala Tyr Leu Ala Ser Leu Asp His Leu Leu His Ala Phe Pro Ser
            35                  40                  45
Ile Gly Gln Ser Ile Val Gln Glu Leu Lys Ser Gln Arg Ser Arg Leu
        50                  55                  60
Lys Met Ile Ala Ser Glu Asn Phe Ser Ser Leu Ser Val Gln Leu Ala
65                  70                  75                  80
Met Gly Asn Leu Leu Thr Asp Lys Tyr Cys Glu Gly Ser Pro Phe Lys
                85                  90                  95
Arg Phe Tyr Ser Cys Cys Glu Asn Val Asp Ala Ile Glu Trp Glu Cys
            100                 105                 110
Ala Glu Thr Ala Lys Glu Leu Phe Gly Ala Glu Ser Ala Phe Val Gln
        115                 120                 125
Pro His Ser Gly Ala Asp Ala Asn Leu Leu Ala Ile Met Ser Ile Ile
    130                 135                 140
Thr Gln Lys Ile Gln Ser Pro Ala Val Gln Gln Leu Gly Tyr Lys Thr
145                 150                 155                 160
Ile Asn Asp Leu Pro Glu Gln Glu Tyr Glu Ala Leu Lys Ala Glu Met
                165                 170                 175
Ala Gln His Lys Cys Leu Gly Pro Ser Leu Asn Ser Gly Gly His Leu
            180                 185                 190
Thr His Gly Thr Val Arg Met Asn Ile Met Ser Lys Leu Met His Cys
        195                 200                 205
Leu Pro Tyr Glu Val Asn Leu Asp Thr Glu Leu Phe Asp Tyr Asp Glu
    210                 215                 220
Ile Ala Lys Xaa Ala Lys Glu His Lys Pro Thr Val Leu Ile Ala Gly
225                 230                 235                 240
Tyr Ser Ser Tyr Ser Arg Arg Phe Asn Phe Ala Thr Leu Lys Gln Ile
                245                 250                 255
Ala Glu Asp Cys Gly Ala Val Leu Trp Val Asp Met Ala His Phe Ala
            260                 265                 270
Gly Leu Val Ala Gly Gly Val Phe Val Gly Glu Glu Asn Pro Met Pro
        275                 280                 285
Tyr Ala Asp Ile Val Thr Thr Thr Thr His Lys Thr Leu Arg Gly Pro
    290                 295                 300
Arg Gly Gly Leu Val Leu Ala Lys Xaa Glu Tyr Ala Asn Thr Leu Asn
305                 310                 315                 320
Lys Ala Cys Leu Xaa Met Met Gly Gly Pro Leu Pro His Val Ile Ala
                325                 330                 335
Ala Lys Ala Ile Ala Leu Lys Glu Ala Met Thr Ile Asn Phe Arg Lys
            340                 345                 350
Tyr Ala His Lys Val Val Glu Asn Ala Gln Thr Leu Ala Glu Val Phe
        355                 360                 365
Gln Arg Asn Gly Leu Arg Leu Leu Thr Gly Gly Thr Asp Asn His Met
    370                 375                 380
Leu Ile Ile Asp Leu Thr Ser Leu Gly Val Pro Gly Arg Ile Ala Glu
385                 390                 395                 400
Asp Met Leu Thr Ser Val Gly Ile Ala Val Asn Arg Asn Thr Ile Pro
                405                 410                 415
Ser Asp Ala Ser Gly Gln Trp Lys Thr Ser Gly Ile Arg Leu Gly Thr
            420                 425                 430
Pro Ala Leu Thr Thr Leu Gly Met Gly Ser Ala Glu Met Glu Glu Val
        435                 440                 445
Ala Asn Ile Ile Val Lys Val Leu Arg Asn Ile Thr Val Arg Ser Asn
    450                 455                 460
Ala Glu Ser Gly Ser Ser Lys Ser Glu Gly Glu Leu Ser Glu Gly Ile
465                 470                 475                 480
Ala Gln Glu Ala Arg Gln Arg Val Ala Asp Leu Leu Gly Arg Phe Pro
                485                 490                 495
Leu Tyr Pro Glu Ile Asp Leu Glu Thr Leu Val
            500                 505
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09254126 - 1H3G

<210>1047
<211>152
<212>PRT
<213>Chlamydia trachomatis
<400>1047
Gly Val Ala Lys Arg Leu Pro Gly Thr Ala His Lys Leu Asn Thr Asp
1 5 10 15
Pro Val Asp Ala Ala Lys Pro Val Thr Thr Val Val Lys Gly Glu Glu
20 25 30
Ile Ile Leu Ile Trp Ser Gln Thr Ala Lys Leu Ala Ser Thr Asp Pro
35 40 45
Pro Gly Leu Leu Met Thr Asn Thr Ile Gly Cys Pro Gly Leu Val Ser
50 55 60
Ser Lys Tyr Gln Ser Phe Leu Met Ala Ser Ala Ala Leu Phe Ser Val
65 70 75 80
Thr Gly Ser Glu Lys Lys Ile Arg Arg Glu Ser Asn Asn Phe Leu Ser
85 90 95
Met Thr Ser Cys Asn Leu Cys Ile Ile Ser Pro Ser Gly Ile Glu Ser
100 105 110
Pro Thr Lys Leu Ala Phe Pro Asp Arg Phe Gln Asp Lys Glu Gly Ile
115 120 125
Phe Leu Ile Asn Gln Pro His Val Val Ser Leu Pro Glu Arg Ser Leu
130 135 140
Leu Thr Ala Leu Pro His Phe Tyr
145 150
<210>1048
<211>198
<212>PRT
<213>Chlamydia trachomatis
<400>1048
Gly Asn Ala Ser Leu Val Gly Asp Ser Met Pro Glu Gly Glu Met Met
1 5 10 15
His Lys Leu Gln Asp Val Ile Asp Arg Lys Leu Leu Asp Ser Arg Arg
20 25 30
Ile Phe Phe Ser Glu Pro Val Thr Glu Lys Ser Ala Ala Glu Ala Ile
35 40 45
Lys Lys Leu Trp Tyr Leu Glu Leu Thr Asn Pro Gly Gln Pro Ile Val
50 55 60
Phe Val Ile Asn Ser Pro Gly Gly Ser Val Asp Ala Ser Phe Ala Val
65 70 75 80
Trp Asp Gln Ile Lys Met Ile Ser Ser Pro Leu Thr Thr Val Val Thr
85 90 95
Gly Leu Ala Ala Ser Thr Gly Ser Val Leu Ser Leu Cys Ala Val Pro
100 105 110
Gly Arg Arg Phe Ala Thr Pro His Ala Arg Ile Met Ile Thr Lys Pro
115 120 125
Ser Ile Gly Gly Thr Ile Thr Gly Gln Ala Thr Asp Leu Asp Ile His
130 135 140
Ala Arg Glu Xaa Leu Lys Thr Lys Ala Arg Ile Ile Asp Val Tyr Val
145 150 155 160
Glu Ala Thr Gly Gln Ser Pro Glu Val Ile Glu Lys Ala Ile Asp Arg
165 170 175
Asp Met Trp Met Ser Ala Asn Glu Ala Met Glu Phe Gly Leu Leu Asp
180 185 190
Gly Ile Ser Leu Leu Phe
195
<210>1049
<211>90
<212>PRT
<213>Chlamydia trachomatis
<400>1049

09695.1 = 2004/0219645

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Ser Asn Gly Val Trp Thr Val Arg Trp Asp Phe Ser Ser Leu Leu Thr
  1               5                  10                  15
Thr Cys Arg Tyr Leu Leu Tyr Ser Gly Ala Gly Asn Ser Phe Ile Leu
             20                  25                  30
Gly Glu Ser Met Pro Ser Leu Glu Asp Val Leu Phe Leu Cys Gln Glu
         35                  40                  45
Glu Met Val Asp Gly Phe Leu Cys Val Glu Ser Ser Glu Ile Ala Asp
     50                  55                  60
Ala Lys Leu Thr Val Phe Asn Ser Asp Gly Ser Ile Ala Ser Met Cys
 65                  70                  75                  80
Gly Asn Gly Leu Gln Ser Gln Trp Arg Thr
                 85                  90
<210>1050
<211>210
<212>PRT
<213>Chlamydia trachomatis
<400>1050
Trp Ile Tyr Arg Val Tyr Val Arg Glu Trp Val Ala Val Ala Met Ala
  1               5                  10                  15
His Val Ala Gln Cys Phe Gly Leu Glu Asp Val Ser Ile Glu Thr Glu
             20                  25                  30
Arg Gly Val Tyr Gln Gly Lys Phe Phe Ser Met Asn Arg Val Leu Val
         35                  40                  45
Asp Met Thr Leu Pro Asp Trp Lys Lys Ala Glu Arg Lys Leu Thr His
     50                  55                  60
Val Leu Pro Gly Met Pro Glu Gln Val Phe Phe Ile Asp Thr Gly Val
 65                  70                  75                  80
Pro His Val Val Val Phe Val Ser Asp Leu Ser Lys Val Pro Val Gln
                 85                  90                  95
Glu Trp Gly Ser Phe Leu Arg Tyr His Glu Asp Phe Ala Pro Glu Gly
            100                 105                 110
Val Asn Val Asp Phe Val Gln Arg Lys Lys Asp Asp Leu Leu Leu Val
        115                 120                 125
Tyr Thr Tyr Glu Arg Gly Cys Glu Arg Glu Thr Leu Ser Cys Gly Thr
    130                 135                 140
Gly Met Leu Ala Ser Ala Leu Val Ala Ala Asp Ile Phe Ser Leu Gly
145                 150                 155                 160
Gln Asp Phe Ser Ile Ala Val Cys Ser Arg Ser Arg Asn Leu Ile Lys
                165                 170                 175
Ile Phe Ser Glu Lys Gly Lys Val Phe Leu Glu Gly Pro Val Ser Leu
            180                 185                 190
Leu Asn Arg Ser Glu Asn Phe Gly Trp Leu Glu Pro Lys Ser Arg Arg
        195                 200                 205
Phe Gly
    210
<210>1051
<211>200
<212>PRT
<213>Chlamydia trachomatis
<400>1051
His Lys Arg Glu Leu Leu Ser Asn Arg Ala Ser Pro Ile Leu Glu Pro
  1               5                  10                  15
Met Thr Thr Tyr Pro Val Pro Gln Asn Pro Leu Leu Leu Arg Val Leu
             20                  25                  30
Arg Leu Met Asp Ala Phe Ser Lys Ser Asp Asp Glu Arg Asp Phe Tyr
         35                  40                  45
Leu Asp Arg Val Xaa Gly Phe Ile Leu Tyr Ile Asp Leu Asp Lys Asp
     50                  55                  60
Gln Glu Asp Leu Asp Lys Ile Tyr Gln Glu Leu Glu Glu Asn Ala Asp
 65                  70                  75                  80
Arg Tyr Cys Leu Ile Pro Lys Leu Thr Phe Tyr Glu Ile Lys Lys Ile
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09254205 - 14 Sep 09

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                85                  90                  95
Met Glu Thr Phe Val Asn Glu Lys Ile Tyr Asp Ile Asp Thr Lys Glu
            100                 105                 110
Lys Phe Leu Glu Ile Val Gln Ser Lys Asn Ala Arg Glu Gln Phe Gln
        115                 120                 125
Glu Phe Leu Tyr Asp His Glu Thr Glu Gln Glu Lys Trp Gln Gln Phe
    130                 135                 140
Tyr Val Glu Arg Ser Arg Ile Arg Ile Ile Glu Trp Leu Arg Asn Asn
145                 150                 155                 160
Gln Phe Gln Phe Val Phe Glu Glu Asp Leu Asp Phe Ser Lys His Ile
                165                 170                 175
Leu Glu Gln Leu Lys Val His Leu Phe Asp Ala Lys Val Ser Lys Glu
            180                 185                 190
Leu Thr Gln Ala Arg His Phe Phe
        195                 200
<210>1052
<211>171
<212>PRT
<213>Chlamydia trachomatis
<400>1052
Ala His Phe Arg Thr Thr Glu Gly Thr Ser Ile Arg Cys Gln Gly Ile
  1               5                  10                  15
Glu Arg Val Asn Thr Gly Ala Ser Leu Leu Leu Asn Lys Ser Lys Val
             20                  25                  30
Tyr Tyr Ser Asn Glu Ala Leu Asn Pro Arg Pro Lys Arg Gly Arg Pro
         35                  40                  45
Pro Lys Gln Ser Ala Lys Val Glu Ala Glu Thr Thr Ile Ser Asn Asp
     50                  55                  60
Ile Tyr Thr Lys Val Pro Ser Ala Ala Arg Arg Phe Leu Phe Leu Pro
 65                  70                  75                  80
Glu Ile Thr Ser Pro Ser Ser Leu Thr Phe Ser Glu Lys Phe Asp Thr
                85                  90                  95
Glu Glu Glu Phe Leu Ala His Leu Arg Gly Gly Gly Arg Leu Glu Asp
            100                 105                 110
Gln Leu Asn Leu Ala Lys Phe Ser Glu Arg Phe Asp Ser Leu Arg Glu
        115                 120                 125
Leu Ser Ala Lys Leu Gly Tyr Asp Ser Asp Gly Glu Thr Gly Asp Phe
    130                 135                 140
Phe Asn Glu Glu Tyr Asp Asp Glu Glu Glu Glu Ile Lys Pro Lys Lys
145                 150                 155                 160
Thr Thr Lys Arg Gly Arg Lys Lys Ser Arg Ser
                165                 170
<210>1053
<211>232
<212>PRT
<213>Chlamydia trachomatis
<400>1053
Asn Ser Leu Glu Thr Ile Met Thr Asp Phe His Asp Lys Pro Asn Ile
  1               5                  10                  15
Gln Ile Met Phe Asp Ser Leu Ala Pro Thr Tyr Asp Lys Ile Asn Gly
             20                  25                  30
Ile Leu Ser Leu Gly Leu His Ile Ala Trp Asn Asn Ala Leu Val Ser
         35                  40                  45
Leu Leu Gly Glu Thr Asn His Leu Leu Asp Leu Cys Ala Gly Thr Gly
     50                  55                  60
Arg Val Ala Leu Ser Tyr Val Gln Asn Tyr Pro Arg Ala Ser Ala Thr
 65                  70                  75                  80
Leu Val Asp Phe Ser Thr Lys Met Leu Glu Asn Val Gln Lys Arg His
                85                  90                  95
Pro Ser Ala Pro Phe Ser Tyr Ile Thr Ser Asp Val Thr His Leu Pro
            100                 105                 110
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Sequence Listing

Leu Pro Asp Asn Thr Phe Arg Leu Ala Ser Met Ala Tyr Gly Leu Arg
115 120 125
Asn Leu Ser Tyr Pro Leu Glu Ala Leu Arg Glu Val Tyr Arg Val Leu
130 135 140
Gln Pro Gly Gly His Leu Gly Ile Leu Glu Leu Thr Arg Pro Ala Thr
145 150 155 160
Tyr Asn Pro Val Tyr Leu Leu His Lys Leu Tyr Leu Asn Leu Val Val
165 170 175
Pro Ser Val Gly Arg Phe Tyr Ser Gly Asn Ser Tyr Ala Tyr Ser Tyr
180 185 190
Leu Lys Glu Ser Ile Arg Asp Leu Pro Arg Met Pro Leu Ser Lys Gln
195 200 205
Ser Phe Met Gln Arg Ile Tyr Ala Leu Ser Gly Asn Ala Asn Tyr Phe
210 215 220
Leu Ala Gln Gln Pro Phe Gly Phe
225 230

<210>1054
<211>286
<212>PRT
<213>Chlamydia trachomatis
<400>1054
Arg Asp Val Pro Ser His Asn Thr Thr Trp Ser Tyr Pro Met Leu Ser
1 5 10 15
Gln Phe Gln Asp Arg Leu Asn Ile Gly Cys Val Arg Tyr Val Asn Ala
20 25 30
Leu Pro Phe Ser Ser Gly Leu Ser Gln Ala Pro Gly Val Ser Leu Leu
35 40 45
Met Asp Thr Pro Thr Asn Leu Val Pro Lys Leu Leu Ser Arg Glu Ile
50 55 60
Asp Tyr Ala Leu Thr Ser Val Ala Ala Thr Phe Ser Ser Ser Leu His
65 70 75 80
Arg Val Ser Ser Phe Gly Ile Ala Ala Tyr Lys Lys Ile Leu Ser Val
85 90 95
Asn Leu His Ala Thr Ser Gln Phe Phe Ala Lys Glu Ala Pro His Ile
100 105 110
Ala Ala Thr Lys Glu Ser Leu Ser Ser Ile Leu Leu Leu Arg Val Leu
115 120 125
Cys Glu Asn Leu Trp Asn Ile Pro Phe Pro Ser Val Thr Leu Leu Ser
130 135 140
Ser Asp Ser Ile Leu Thr Gln Ala Glu His Tyr Asp Ala Leu Leu Leu
145 150 155 160
Ile Gly Asp Thr Ala Leu Arg His Pro Ile Ile Pro Gly Phe His Thr
165 170 175
Tyr Asp Leu Ala Ala Ser Trp Tyr Asp Leu Thr Ala Lys Pro Phe Val
180 185 190
Phe Ala Gly Ile Leu Ser Leu Ser Ser Thr Ile Ser Phe Gln Leu Gln
195 200 205
Gln Glu Phe Ser Ser Thr Leu Asn Tyr Phe Gln Asn His Lys Glu Asp
210 215 220
Ile Thr Ser Lys Ala Ala Ala Leu Leu Lys Leu Pro Glu Ser Leu Met
225 230 235 240
Gln Glu Tyr Tyr Thr Leu Cys Arg Tyr Glu Leu Ser Glu Glu Asp Phe
245 250 255
Ala Gly Leu Glu Gln Phe Arg Asp Tyr Tyr Asp Arg Leu Pro Arg Gln
260 265 270
Ala Lys Tyr Pro Asn His Val Arg Phe Ser Cys Ala Tyr Leu
275 280 285

<210>1055
<211>394
<212>PRT
<213>Chlamydia trachomatis

6604420.1

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Val Ala Ala Ala Thr Ala Val Arg Lys Arg Ser Leu Val Pro Val Lys
1 5 10 15
Ser Lys Thr His Lys Leu Ile Thr Thr Met Thr Thr Leu Pro Ala Arg
20 25 30
Ile Leu Pro Lys Ser Ala Trp Leu Lys Thr Leu Phe Asp Asp Tyr Leu
35 40 45
Ser Gly Ala Arg Leu Ser Glu Lys Gln Ala Leu Gln Leu Leu Leu Val
50 55 60
Asp Ala Glu Asp Gln Gln Ala Leu Trp Ser Phe Ala Asp Leu Ile Arg
65 70 75 80
Ala Asn Arg Val Gly Asp Thr Val Phe Tyr Ser Ser Thr Leu Tyr Leu
85 90 95
Tyr Pro Thr Asn Phe Cys Gln Phe Asn Cys Thr Phe Cys Ser Phe Tyr
100 105 110
Ala Lys Pro Gly Asn Pro Thr Gly Trp Phe Phe Thr Pro Asp Gln Leu
115 120 125
Val Gln Ser Ile Lys Glu Asn Pro Ser Pro Ile Thr Glu Thr His Ile
130 135 140
Val Ala Gly Cys Tyr Pro Ser Cys Asn Leu Ala Tyr Tyr Glu Glu Leu
145 150 155 160
Phe Ser Lys Ile Lys Gln Asn Phe Pro Asp Leu His Ile Lys Ala Leu
165 170 175
Ser Ala Ile Glu Tyr Asp Tyr Leu Ser Lys Leu Asp Asn Leu Pro Val
180 185 190
Lys Glu Val Met Gln Arg Leu Arg Ile Ala Gly Leu Asp Ser Ile Pro
195 200 205
Gly Gly Gly Ala Glu Ile Leu Val Asp Glu Val Arg Glu Thr Leu Ser
210 215 220
Arg Gly Arg Leu Ser Ser Gln Gly Phe Leu Glu Ile His Glu Thr Ala
225 230 235 240
His Ser Leu Gly Ile Pro Ser Asn Ala Thr Met Leu Cys Tyr His Arg
245 250 255
Glu Thr Pro Ala Asp Ile Met Thr His Met Ser Lys Leu Arg Ala Leu
260 265 270
Gln Asp Lys Thr Ser Gly Phe Lys Asn Phe Ile Leu Leu Lys Phe Ala
275 280 285
Ser Glu Asn Asn Ala Leu Gly Lys Arg Leu His Lys Met Thr Ser Arg
290 295 300
His Ser Ile Pro Pro Ala Thr Ile Ile Ala Val Ala Arg Leu Phe Leu
305 310 315 320
Asp Asn Ile Pro Asn Ile Lys Ala Leu Trp Asn Tyr Leu Gly Leu Asp
325 330 335
Val Ala Leu His Leu Leu Ser Cys Gly Xaa Asn Asp Leu Ser Ser Thr
340 345 350
His Gln Gly Glu Lys Val Phe Arg Met Ala Ser Ser Gln Glu Pro Ile
355 360 365
Arg Met Asp Ile Glu Gly Met Ser His Leu Ile Ile Gln His Gly Arg
370 375 380
Ile Pro Cys Leu Val Asn Ser Lys Thr Val
385 390
<210>1056
<211>174
<212>PRT
<213>Chlamydia trachomatis
<400>1056
Arg Glu Thr Cys Val Phe Gly Phe Val Ala Gly Gly Leu Asp Asp Arg
1 5 10 15
Asn Leu Tyr Asn His Phe Phe Asp Ser Asp Gln Gln Gln Tyr Ser Pro
20 25 30
Gly Leu Thr Ala Val Ile Cys Asn Lys Tyr Ser Arg Asp Ser Leu Leu

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          35                  40                  45
Glu Ala Leu Tyr Gln Arg Gln Cys Tyr Ala Thr Thr Gly Gln Arg Ile
     50                  55                  60
Ile Val Asn Phe Gln Ile Thr Ser Ala Pro Met Gly Ser Glu Leu Ser
 65                  70                  75                  80
Thr Ala Ile Lys Pro Gly Leu Val Ile Asn Arg His Ile Ser Gly Tyr
                 85                  90                  95
Val Ala Gly Thr Ala Lys Ile Ala Ser Ile Glu Ile Ile Arg Asn Gly
            100                 105                 110
Asp Ile Leu His Pro Phe His Pro Asp Gly Asn Asn Phe Glu Tyr Glu
        115                 120                 125
Tyr Asp Asp Leu Ser Pro Phe Ala Gln Val Thr Leu Lys Asp Pro Gln
    130                 135                 140
Asn Gly Ala Pro Phe Ala Phe Tyr Tyr Leu Arg Val Thr Gln Glu Asn
145                 150                 155                 160
Gly Ala Met Ala Leu Ser Ser Pro Xaa Trp Ile Asp Leu Asn
                165                 170
<210>1057
<211>332
<212>PRT
<213>Chlamydia trachomatis
<400>1057
Lys Arg Leu Pro Arg Ile Leu Trp Leu Gln Lys Leu Cys Met Leu Pro
  1                 5                  10                  15
Glu Ala Ile Ser Leu Leu Ser Asn Leu Leu Ser Leu Val Met Trp Lys
             20                  25                  30
Leu Gly Thr Leu Ser Leu Leu Phe Leu Ala Pro Leu Pro Thr Ser Leu
         35                  40                  45
Lys Arg Thr Leu Gln Val Met Val Leu Asn Tyr Leu Leu Asn Ala Val
     50                  55                  60
Asn Leu Ser Leu Phe Met Leu Thr His Gln Gly Lys Asp Leu Leu Lys
 65                  70                  75                  80
Asp Pro Asp Ile Phe Thr Met Asp Ile Arg Gly Asn Val Leu Lys Asn
                 85                  90                  95
Ile Arg Ile Phe Ala Pro Ser Tyr Val Ile Lys Asn Lys Arg Phe Asp
            100                 105                 110
Ile Thr Val Arg Phe Glu Asp Glu Phe Gly Asn Leu Thr Asn Phe Ser
        115                 120                 125
Pro Glu Glu Thr His Ile Glu Leu Ser Tyr Glu His Leu Arg Glu Asn
    130                 135                 140
Leu Asn Trp Gln Leu Phe Ile Pro Glu Thr Gly Phe Val Ile Leu Pro
145                 150                 155                 160
Asn Leu Tyr Phe Asn Glu Pro Gly Ile Tyr Arg Ile Gln Leu Arg Asn
                165                 170                 175
Gln Ala Thr Lys Glu Val Phe Thr Ser Ala Pro Ile Lys Cys Phe Ala
            180                 185                 190
Glu Thr Ser Ser His Leu Leu Trp Gly Leu Leu His Gly Glu Ser Asp
        195                 200                 205
Arg Val Asp Ser Glu Gly Asn Ile Glu Ser Cys Leu Arg Tyr Phe Arg
    210                 215                 220
Asp Asp Cys Ala Leu Asn Phe Phe Ala Thr Ser Ser Phe Glu Ile Gln
225                 230                 235                 240
Asp Gly Leu Thr Pro Glu Thr Ile Lys Thr Ile Asn Gln Thr Val Ala
                245                 250                 255
Asp Phe Asn Glu Glu Asp Arg Phe Ile Ala Leu Ser Gly Ala Gln Tyr
            260                 265                 270
Leu Ser Glu Glu Pro Gly Glu Gly Ile Arg Glu Val Leu Leu Met Lys
        275                 280                 285
Glu Pro Lys Ser Pro Gly Lys His Lys Glu Cys Lys Leu Phe Pro Leu
    290                 295                 300
Ser Lys Leu Tyr Lys Gln Ser Thr Ser His Glu Leu Ile Ser Ile Pro
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09696-0200

305 310 315 320
Gln Leu His Cys Phe Lys Glu Ile Trp Ile Gln Phe
325 330

<210>1058
<211>204
<212>PRT
<213>Chlamydia trachomatis
<400>1058
Arg Ser Ser Val Lys His Ala Lys Ala Lys Phe Leu Gln Ile Lys Asp
1 5 10 15
Phe Leu Val Thr Arg Thr Tyr Ile Leu Val Ala Met Arg Arg Ser Val
20 25 30
Cys Tyr Val Thr Pro Ser Val Ala Arg Ala Gly Gln Ile Ser Thr Trp
35 40 45
Arg Phe Glu Tyr Ser Ser Ala Asn Phe Leu Pro Glu Gly Thr Leu Leu
50 55 60
Lys Phe Asp Leu Gly Ile Asp Gly Arg Pro Ile Asp Trp Glu Ile Pro
65 70 75 80
Ser Ile Asp Leu Ser Gln Pro Cys Asn Thr Ile Tyr Leu Glu Thr Pro
85 90 95
Ser Glu Asp Ile Val Ala Ala Lys Ala Val Tyr Ala Pro Gly Gly Tyr
100 105 110
Ile Pro Thr Phe Glu Phe Thr Leu Pro Cys Asp Val Glu Ala Gly Asp
115 120 125
Thr Phe Ser Ile Ile Leu Gly Ser Ser Pro Asn Phe Pro Gln Glu Asp
130 135 140
Ser Ser Gly Asn Gly Ala Gln Leu Phe Thr Gln Arg Arg Lys Pro Phe
145 150 155 160
Ser Leu Tyr Val Asp Pro Ser Gly Lys Gly Ser Phe Glu Arg Ser Arg
165 170 175
Tyr Leu His Asn Gly Tyr Gln Arg Lys Cys Ile Lys Lys Tyr Pro Asp
180 185 190
Phe Cys Ser Phe Leu Cys Asp Gln Lys Gln Thr Leu
195 200

<210>1059
<211>123
<212>PRT
<213>Chlamydia trachomatis
<400>1059
Arg Leu Ser Leu Met Asn Thr Asp Leu Gln Lys Ala Phe Val Ser Met
1 5 10 15
Glu Asp Ile Val Glu Glu Ile Phe Gly Glu Ile Ala Asp Glu Tyr Asp
20 25 30
Asp Gln Glu Asp Val His Tyr Lys Xaa Ile Gly Asn Ala Trp Ile Val
35 40 45
Asp Gly Arg Met Asn Ile Ser Asp Ala Glu Glu Cys Phe Gly Leu His
50 55 60
Ile Glu His Glu Ser Ser Tyr Asp Thr Leu Gly Gly Tyr Val Phe His
65 70 75 80
Lys Leu Gly Ala Val Pro Glu Lys Gly Met Lys Ile Tyr Tyr Glu Asp
85 90 95
Phe Ala Ile Asp Ile Leu Ser Cys Ser Asp Arg Ser Val Glu Lys Met
100 105 110
Lys Ile Thr Pro Arg Arg Arg Lys Pro Leu Ser
115 120

<210>1060
<211>298
<212>PRT
<213>Chlamydia trachomatis
<400>1060
Ala Ser Ser Leu Phe Val Asp Ser Pro Asn Asn Phe Phe Tyr Arg Ser

Sent by: Sapphire

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  1               5                  10                  15
Trp Leu Phe Ser Pro Leu Ile Met Leu Tyr Ile Leu Leu Ala Ile Ile
            20                  25                  30
Val Leu Phe Leu Phe Leu Gly Ser Ala Thr His Arg Arg Ala Ser Ile
        35                  40                  45
Ser Ala Tyr Gly Gly Glu Gly Leu Pro Pro Phe Ser Ser Cys Pro Lys
    50                  55                  60
Val Leu Pro Leu Leu Cys Leu Ile Tyr Gly Met Leu Gly Ala Pro Val
65                  70                  75                  80
Tyr Gln Tyr Ile His Asn Phe Phe Ser Leu Ser Pro Ser Ile Phe Trp
                85                  90                  95
Leu Ile Phe Leu Ser Leu Ala Leu Val Ile Tyr Lys Phe Leu Pro Leu
            100                 105                 110
Cys Pro Gly Tyr Ser Asp Asp Ser Phe Ser Tyr Lys Val Ser Ser Ser
        115                 120                 125
Thr Val Lys Thr Leu Glu Asn Cys Leu Ala Gly Phe Lys Thr Pro Ser
    130                 135                 140
Ile Thr Ala Met Gln Gln Thr Pro Pro Pro Glu Pro Pro Asn Glu Leu
145                 150                 155                 160
Ser Thr Asn Ile Ser Cys Leu Asn His Met Ile Ala Arg Glu Ile Met
                165                 170                 175
Thr Pro Lys Ala Asp Ile Phe Ala Leu Gln Gly Asp Thr Pro Ile Ser
            180                 185                 190
Gln Ala Phe Pro Leu Ile Ile Asp Glu Gly Tyr Ser Arg Ile Pro Leu
        195                 200                 205
Phe Thr Lys Ser Ile Asp Asp Ile Thr Gly Met Val Leu Val Lys Asp
    210                 215                 220
Leu Ser Pro Val Tyr Tyr Lys Asp Pro His Thr Ser Gln Pro Leu Ser
225                 230                 235                 240
Ser Ile Ala Tyr Pro Pro Leu Tyr Thr Pro Glu Ile Arg Arg Ala Ser
                245                 250                 255
Leu Leu Leu Gln Glu Phe Xaa Gln Lys Arg Cys His Leu Ala Ile Val
            260                 265                 270
Val Asn Glu Tyr Gly Phe Thr Glu Gly Leu Cys Leu Tyr Gly Arg Tyr
        275                 280                 285
Arg Arg Arg Asn Leu Trp Arg Asn Cys Arg
    290                 295
<210>1061
<211>165
<212>PRT
<213>Chlamydia trachomatis
<400>1061
Val Ile Phe Phe Leu Leu Ile Leu Asp Arg Ser Ser Pro Gln Ile Phe
  1               5                  10                  15
Ile Ser Asn Glu Gln Gln Asp Val Ser Ile Asp Leu Gln Ser Ala Gln
            20                  25                  30
Arg Leu Val Val Leu Phe Leu Glu Leu Gln Lys Val Ser Thr Asp Gln
        35                  40                  45
Val Tyr Val Tyr Phe Leu Asp Asp Thr Ala Leu Ala Gln Leu His Asp
    50                  55                  60
Glu Gln Phe Ser Asp Pro Ser Leu Thr Asp Thr Ile Thr Leu Pro Ile
65                  70                  75                  80
Asp Lys Pro Gly Ile Ala Ser Phe Pro His Val Leu Gly Glu Ala Phe
                85                  90                  95
Val Ser Pro Lys Ala Ala Met Arg Phe Leu Glu Gln Tyr Thr Glu Asp
            100                 105                 110
Gln Leu Tyr His Glu Ile Ser Arg Tyr Val Val His Ser Leu Leu His
        115                 120                 125
Met Leu Gly Tyr Asp Asp Gln Thr Asp Glu Asp Lys Arg Ile Met Gln
    130                 135                 140
Glu Gln Glu Asp Val Ser Leu Ser Phe Leu Ala Glu His Gln Ala Leu
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145 150 155 160
Leu Arg Pro Ala Val
165

<210>1062
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<212>PRT
<213>Chlamydia trachomatis
<400>1062
Gln Gln Ser Leu Gly Leu Asn Gln Asp Pro Leu Asn Lys Val Val Met
1 5 10 15
Val Pro Phe Pro Asn Arg Glu Val Leu Cys Ile Gly Leu Val Ala Gly
20 25 30
Glu Ala Pro Thr Thr Cys Ser Gln Asp Ala Asp Asp Pro Met Ile Thr
35 40 45
Val Phe Ile Pro Thr Thr Pro Asn Pro Thr Ser Gly Phe Leu Thr Leu
50 55 60
Phe Lys Lys Ser Asp Ile Thr Phe Leu Asp Met Lys Ile Glu Asp Ala
65 70 75 80
Phe Lys Tyr Val Ile Ser Cys Gly Val Leu Asn Ser Asp Pro Cys Ala
85 90 95
Thr Ser Pro Phe Ile His Pro Gln Phe
100 105

<210>1063
<211>108
<212>PRT
<213>Chlamydia trachomatis
<400>1063
Leu Met Glu Pro Tyr Ala Val Ile Gln Thr Gly Asn Lys Gln Tyr Gln
1 5 10 15
Val Arg Lys Gly Asp Val Ile Asp Val Glu Leu Leu Asp Gly Ile Ser
20 25 30
Glu Glu Asn Lys Glu Val Leu Phe Gln Asp Val Leu Phe Thr Phe Asp
35 40 45
Gly Glu Lys Ala Ser Val Gly Ala Pro Thr Val Gly Asn Ala Val Val
50 55 60
Lys Gly Glu Leu Val Ser Phe Val Arg Gly Glu Lys Val Val Ala Tyr
65 70 75 80
Lys Tyr Lys Lys Arg Lys Asn Tyr His Lys Lys Ile Gly His Arg Gln
85 90 95
Asn Tyr Leu Arg Val Lys Ile Ser Asp Leu Val Met
100 105

<210>1064
<211>83
<212>PRT
<213>Chlamydia trachomatis
<400>1064
Met Ala His Lys Lys Gly Gln Gly Ala Ser Arg Asn Gly Arg Asp Ser
1 5 10 15
Glu Ser Lys Arg Leu Gly Leu Lys Val Gly Ala Gly Gln Arg Val Ser
20 25 30
Thr Gly Ser Ile Leu Val Arg Gln Arg Gly Thr Lys Trp His Pro Ala
35 40 45
Val Asn Val Gly Arg Gly Lys Asp Asp Thr Leu Phe Ala Leu Ala Asp
50 55 60
Gly Ile Val Val Met Lys Lys Thr Asp Arg Thr Tyr Val Ser Val Ile
65 70 75 80
Pro Gln Ala

<210>1065
<211>267
<212>PRT

<213>Chlamydia trachomatis
<400>1065
Leu Phe Lys Leu Cys Phe Cys Leu Arg Val Lys Ile Gly Leu Phe Leu
1 5 10 15
Phe Val Pro Gly Arg Val Met Phe Val Asp Gln Ile Thr Leu Glu Leu
20 25 30
Arg Ala Gly Lys Gly Gly Asn Gly Val Val Ala Trp Arg Lys Glu Lys
35 40 45
Tyr Leu Pro Lys Gly Gly Pro Tyr Gly Gly Asn Gly Gly Asn Gly Gly
50 55 60
Ser Ile Leu Ile Glu Thr Val Thr Asn Met Tyr Ser Phe Glu Glu Tyr
65 70 75 80
Arg Asn Leu Arg Phe Leu Lys Ala Asp Asp Gly Gln Ala Gly Ala Ser
85 90 95
Asn Asn Arg Thr Gly Arg Asn Gly Lys Asp Leu Val Leu Lys Val Pro
100 105 110
Glu Gly Thr Leu Leu Arg Asp Ala Ala Thr Gly Glu Leu Ile His Asp
115 120 125
Phe Thr Lys Asp Gly Glu Arg Ile Val Val Cys Gln Gly Gly Arg Gly
130 135 140
Gly Lys Gly Asn Val Phe Phe Lys Thr Ser Thr Asn Arg Ala Pro Thr
145 150 155 160
Lys Ala Thr Pro Gly Lys Pro Gly Glu Ile Arg Leu Val Glu Leu Glu
165 170 175
Leu Lys Leu Ile Ala Asp Ile Gly Leu Val Gly Phe Pro Asn Ala Gly
180 185 190
Lys Ser Thr Leu Phe Asn Thr Leu Ala Arg Thr Glu Val Lys Val Gly
195 200 205
Ala Tyr Pro Phe Thr Thr Leu His Pro Ser Leu Gly Leu Val His Gln
210 215 220
Glu Gly Met Leu Tyr Gln Lys Thr Trp Ile Met Ala Asp Ile Pro Gly
225 230 235 240
Ile Ile Glu Gly Ala Ser Gln Asn Arg Gly Leu Gly Leu Asp Phe Phe
245 250 255
Gly Ile Leu Asn Val Arg Asp Tyr Cys Tyr Ser
260 265

<210>1066
<211>114
<212>PRT
<213>Chlamydia trachomatis
<400>1066
Arg Ser Val Ala Lys Pro Gly Ile Gly Ile Gly Phe Leu Arg His Ile
1 5 10 15
Glu Arg Thr Arg Leu Leu Leu Phe Val Ile Asp Ile Ser Gly Ile Glu
20 25 30
Arg His Ser Pro Glu Gln Asp Leu Lys Ile Leu Met Gly Glu Leu Leu
35 40 45
Ala Tyr Lys Glu Glu Leu Lys Asp Lys Asp Met Val Ile Ala Leu Asn
50 55 60
Lys Ile Asp Gln Leu Leu Pro Asp Glu Arg Glu Glu Arg Val Ala Leu
65 70 75 80
Leu Lys Gln Gln Phe Pro Asp Gln Glu Phe Ile Leu Leu Ser Gly Leu
85 90 95
Thr Gly Glu Gly Val Asp Ala Leu Tyr Asp Leu Phe Lys Ser Lys Leu
100 105 110
Ser Glu

<210>1067
<211>305
<212>PRT
<213>Chlamydia trachomatis

09544-0022P1 SEQ ID NO

<400>1067
Asn Phe Arg Lys Ile Leu Leu Gln His Phe Trp Glu Met Pro Met Ile
1 5 10 15
Ser Ile Leu Cys Ser Leu Phe Pro Pro Leu Leu Phe Pro Ser Leu Leu
20 25 30
Ala Ala Phe Gly Ala Ser Ile Ala Ala Gly Ile Val Gly Ser Tyr Ile
35 40 45
Val Val Lys Arg Ile Val Ser Ile Ser Gly Ser Ile Ala His Ser Ile
50 55 60
Leu Gly Gly Val Gly Ile Ala Leu Trp Leu Gln Tyr Gln Phe Asn Leu
65 70 75 80
Pro Ile Ser Pro Leu His Gly Ala Ile Ala Ser Ala Ile Phe Val Ala
85 90 95
Ile Cys Ile Gly Asn Val His Leu Lys Tyr His Glu Arg Glu Asp Ser
100 105 110
Ile Ile Ser Met Ile Trp Ser Ile Gly Met Ala Ile Gly Ile Ile Cys
115 120 125
Ile Ser Lys Leu Pro Ser Phe Asn Ser Glu Leu Ser Asp Phe Leu Phe
130 135 140
Gly Asn Ile Leu Trp Val Thr Pro Gln Asp Leu Tyr Phe Leu Gly Ile
145 150 155 160
Leu Asp Leu Phe Ile Val Ala Thr Val Ser Ile Cys His Thr Arg Phe
165 170 175
Leu Ala Leu Cys Phe Asp Glu Lys Tyr Met Ala Leu Asn His Tyr Ser
180 185 190
Ile Lys Thr Trp Tyr Leu Leu Leu Leu Ile Leu Thr Ala Ile Thr Thr
195 200 205
Val Val Leu Met Tyr Val Met Gly Val Ile Leu Met Leu Ser Met Leu
210 215 220
Val Leu Pro Val Ser Ile Ala Cys Arg Phe Ser Tyr Lys Met Ser His
225 230 235 240
Ile Ile Tyr Ile Ala Ser Ile Leu Asn Ile Val Cys Ser Phe Leu Gly
245 250 255
Ile Met Leu Ala Tyr Leu Leu Asp Leu Pro Val Gly Pro Val Ile Ala
260 265 270
Ile Leu Met Gly Gly Ala Tyr Ser Leu Ser Leu Leu Leu Asn Arg Ser
275 280 285
Tyr Asn Ala Ser Thr Pro Ser Pro Val Ser Pro Glu Ser Lys Ile Asn
290 295 300
Ser
305
<210>1068
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<212>PRT
<213>Chlamydia trachomatis
<400>1068
Met Thr Lys Gln Met Leu Leu Glu Asn Val Ser Phe Arg Tyr Gly Lys
1 5 10 15
Thr Gly Pro Leu Ile Val Asp His Val Ser Cys Glu Val Tyr Ser Gly
20 25 30
Asp Phe Ile Gly Ile Ile Gly Pro Asn Gly Gly Gly Lys Thr Thr Leu
35 40 45
Thr Gln Leu Met Leu Arg Leu Leu Gln Pro Val Cys Gly Ser Ile Ser
50 55 60
Thr Tyr Ser Val Gln Asp His Arg Pro Leu Ser Ile Gly Trp Val Pro
65 70 75 80
Gln His Phe Ser Tyr Asp Ala Ala Phe Pro Ile Thr Val Lys Glu Thr
85 90 95
Val Leu Ser Gly Arg Leu Ala Thr Leu Pro Trp Tyr Gly Arg Tyr Thr
100 105 110
Gln Glu Asp His Glu Ala Ala Glu Glu Ala Leu Leu Thr Val Asp Leu

SEQUENCE LISTING

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        115                 120                 125
Ile Asp Tyr Lys Asp Ser Cys Phe Ser His Leu Ser Gly Gly Gln Ile
    130                 135                 140
Gln Arg Val Leu Leu Ala Arg Ala Leu Ala Ala Arg Pro Glu Phe Leu
145                 150                 155                 160
Leu Leu Asp Glu Pro Thr Ala Asn Ile Asp Pro Val Asn Gln Gln Lys
                165                 170                 175
Ile Leu Gln Ile Leu Ser Ala Leu Asn Lys His Cys Thr Ile Leu Met
            180                 185                 190
Ile Thr His Asp Leu His His Thr Ala Gly Cys Phe Asn Arg Val Phe
        195                 200                 205
Phe Met Asn Lys Thr Leu Thr Thr Leu Ala Asp Thr Thr Thr Ile Ser
    210                 215                 220
Glu Arg Phe Cys Cys Asn Thr Phe Gly Arg Cys Pro
225                 230                 235
<210>1069
<211>278
<212>PRT
<213>Chlamydia trachomatis
<400>1069
Asp Asn Met Arg Leu Leu Phe Leu Leu Leu Phe Ser Leu Gly Ile Thr
  1               5                  10                  15
Cys Ser Tyr Gly Asp Glu Val Ser Thr Arg Lys Gln Ile Leu Val Ser
             20                  25                  30
Ile Val Pro Tyr Lys Phe Leu Val Glu Gln Ile Ala Gly Asp Thr Cys
         35                  40                  45
Gln Val Phe Ser Ile Val Met Asp Asn His Asp Pro His Asn Tyr Glu
     50                  55                  60
Leu Ser Pro Lys Tyr Ile Glu Lys Ile Arg Gln Val Glu Leu Trp Phe
 65                  70                  75                  80
Arg Ile Gly Glu Gly Phe Glu Lys Thr Cys Glu Arg Ile Ile Ser Cys
                 85                  90                  95
Lys Gln Val Asp Leu Ala Ala Asn Ile Asp Lys Ile Thr Asn Gly Ala
            100                 105                 110
Cys Cys Gln Arg Phe Leu Ser Phe Asp Thr His Thr Trp Leu Ser Pro
        115                 120                 125
Lys Asn Leu Lys Ile Gln Ile Gln Ala Ile Thr Glu Ala Leu Val Glu
    130                 135                 140
Thr Ala Pro Glu His Glu Thr Leu Tyr Arg Lys Asn Cys Ser Leu Leu
145                 150                 155                 160
Gln Ser Gln Leu Asp Leu Leu Asp Gln Lys Ile Ser Ser Ile Val Ser
                165                 170                 175
Ser Thr Ser Gln Arg Asn Val Leu Val Thr His Gly Ala Phe Ala Tyr
            180                 185                 190
Phe Cys Arg Asp Tyr Gly Phe Ile Gln His Thr Ile Glu Arg Ala Asn
        195                 200                 205
His Ser Glu Leu Ser Pro Lys Asp Val Val Arg Val Glu Arg Thr Ile
    210                 215                 220
Arg Asp His Asn Leu His Ser Val Ile Leu Leu Lys His Ala Gly Lys
225                 230                 235                 240
Arg Ser Ser Ala Ala Leu Val Arg Lys Phe Asn Met Thr Pro Ile Leu
                245                 250                 255
Leu Asp Pro Tyr Ala Glu Asp Val Phe Asn Asn Leu Leu Ala Ile Ala
            260                 265                 270
Thr Ala Phe Ala Asn Leu
        275
<210>1070
<211>892
<212>PRT
<213>Chlamydia trachomatis
<400>1070
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SEQ ID NO: 6 FIG. 6

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Gln Ser Thr Thr Gly Gln Val Ala Gly Gly Ala Ile Tyr Ser Pro Thr
             20                  25                  30
Val Thr Ile Ala Thr Pro Val Val Phe Ser Lys Asn Ser Ala Thr Asn
         35                  40                  45
Asn Ala Asn Asn Ala Thr Asp Thr Gln Arg Lys Asp Thr Phe Gly Gly
     50                  55                  60
Ala Ile Gly Ala Thr Ser Ala Val Ser Leu Ser Gly Gly Ala His Phe
 65                  70                  75                  80
Leu Glu Asn Val Ala Asp Leu Gly Ser Ala Ile Gly Leu Val Pro Asp
                 85                  90                  95
Thr Gln Asn Thr Glu Thr Val Lys Leu Glu Ser Gly Ser Tyr Tyr Phe
            100                 105                 110
Glu Lys Asn Lys Ala Leu Lys Arg Ala Thr Ile Tyr Ala Pro Val Val
        115                 120                 125
Ser Ile Lys Ala Tyr Thr Ala Thr Phe Asn Gln Asn Arg Ser Leu Glu
    130                 135                 140
Glu Gly Ser Ala Ile Tyr Phe Thr Lys Glu Ala Ser Ile Glu Ser Leu
145                 150                 155                 160
Gly Ser Val Leu Phe Thr Gly Asn Leu Val Thr Pro Thr Leu Ser Thr
                165                 170                 175
Thr Thr Glu Gly Thr Pro Ala Thr Thr Ser Gly Asp Val Thr Lys Tyr
            180                 185                 190
Gly Ala Ala Ile Phe Gly Gln Ile Ala Ser Ser Asn Gly Ser Gln Thr
        195                 200                 205
Asp Asn Leu Pro Leu Lys Leu Ile Ala Ser Gly Gly Asn Ile Cys Phe
    210                 215                 220
Arg Asn Asn Glu Tyr Arg Pro Thr Ser Ser Asp Thr Gly Thr Ser Thr
225                 230                 235                 240
Phe Cys Ser Ile Ala Gly Asp Val Lys Leu Thr Met Gln Ala Ala Lys
                245                 250                 255
Gly Lys Thr Ile Ser Phe Phe Asp Ala Ile Arg Thr Ser Thr Lys Lys
            260                 265                 270
Thr Gly Thr Gln Ala Thr Ala Tyr Asp Thr Leu Asp Ile Asn Lys Ser
        275                 280                 285
Glu Asp Ser Glu Thr Val Asn Ser Ala Phe Thr Gly Thr Ile Leu Phe
    290                 295                 300
Ser Ser Glu Leu His Glu Asn Lys Ser Tyr Ile Pro Gln Asn Val Val
305                 310                 315                 320
Leu His Ser Gly Ser Leu Val Leu Lys Pro Asn Thr Glu Leu His Val
                325                 330                 335
Ile Ser Phe Glu Gln Lys Glu Gly Ser Ser Leu Val Met Thr Pro Gly
            340                 345                 350
Ser Val Leu Ser Asn Gln Thr Val Ala Asp Gly Ala Leu Val Ile Asn
        355                 360                 365
Asn Met Thr Ile Asp Leu Ser Ser Val Glu Lys Asn Gly Ile Ala Glu
    370                 375                 380
Gly Asn Ile Phe Thr Pro Pro Glu Leu Arg Ile Ile Asp Thr Thr Thr
385                 390                 395                 400
Ser Gly Ser Gly Gly Thr Pro Ser Thr Asp Ser Glu Ser Asn Gln Asn
                405                 410                 415
Ser Asp Asp Thr Lys Glu Gln Asn Asn Asn Asp Ala Ser Asn Gln Gly
            420                 425                 430
Glu Ser Ala Asn Gly Ser Ser Ser Pro Ala Val Ala Ala Ala His Thr
        435                 440                 445
Ser Arg Thr Arg Asn Phe Ala Ala Ala Ala Thr Ala Thr Pro Thr Thr
    450                 455                 460
Thr Pro Thr Ala Thr Thr Thr Thr Ser Asn Gln Val Ile Leu Gly Gly
465                 470                 475                 480
Glu Ile Lys Leu Ile Asp Pro Asn Gly Thr Phe Phe Gln Asn Pro Ala
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                485                 490                 495
Leu Arg Ser Asp Gln Gln Ile Ser Leu Leu Val Leu Pro Thr Asp Ser
            500                 505                 510
Ser Lys Met Gln Ala Gln Lys Ile Val Leu Thr Gly Asp Ile Ala Pro
        515                 520                 525
Gln Lys Gly Tyr Thr Gly Thr Leu Thr Leu Asp Pro Asp Gln Leu Gln
    530                 535                 540
Asn Gly Thr Ile Ser Ala Leu Trp Lys Phe Asp Ser Tyr Arg Gln Trp
545                 550                 555                 560
Ala Tyr Val Pro Arg Asp Asn His Phe Tyr Ala Asn Ser Ile Leu Gly
                565                 570                 575
Ser Gln Met Ser Met Val Thr Val Lys Gln Gly Leu Leu Asn Asp Lys
            580                 585                 590
Met Asn Leu Ala Arg Phe Asp Glu Val Ser Tyr Asn Asn Leu Trp Ile
        595                 600                 605
Ser Gly Leu Gly Thr Met Leu Ser Gln Val Gly Thr Pro Thr Ser Glu
    610                 615                 620
Glu Phe Thr Tyr Tyr Ser Arg Gly Ala Ser Val Ala Leu Asp Ala Lys
625                 630                 635                 640
Pro Ala His Asp Val Ile Val Gly Ala Ala Phe Ser Lys Met Ile Gly
                645                 650                 655
Lys Thr Lys Ser Leu Lys Arg Glu Asn Asn Tyr Thr His Lys Gly Ser
            660                 665                 670
Glu Tyr Ser Tyr Gln Ala Ser Val Tyr Gly Gly Lys Pro Phe His Phe
        675                 680                 685
Val Ile Asn Lys Lys Thr Glu Lys Ser Leu Pro Leu Leu Leu Gln Gly
    690                 695                 700
Val Ile Ser Tyr Gly Tyr Ile Lys His Asp Thr Val Thr His Tyr Pro
705                 710                 715                 720
Thr Ile Arg Glu Arg Asn Gln Gly Glu Trp Glu Asp Leu Gly Trp Leu
                725                 730                 735
Thr Ala Leu Arg Val Ser Ser Val Leu Arg Thr Pro Ala Gln Gly Asp
            740                 745                 750
Thr Lys Arg Ile Thr Val Tyr Gly Glu Leu Glu Tyr Ser Ser Ile Arg
        755                 760                 765
Gln Lys Gln Phe Thr Glu Thr Glu Tyr Asp Pro Arg Tyr Phe Asp Asn
    770                 775                 780
Cys Thr Tyr Arg Asn Leu Ala Ile Pro Met Gly Leu Ala Phe Glu Gly
785                 790                 795                 800
Glu Leu Ser Gly Asn Asp Ile Leu Met Tyr Asn Arg Phe Ser Val Ala
                805                 810                 815
Tyr Met Pro Ser Ile Tyr Arg Asn Ser Pro Thr Cys Lys Tyr Gln Val
            820                 825                 830
Leu Ser Ser Gly Glu Gly Gly Glu Ile Ile Cys Gly Val Pro Thr Arg
        835                 840                 845
Asn Ser Ala Arg Gly Glu Tyr Ser Thr Gln Leu Tyr Pro Gly Pro Leu
    850                 855                 860
Trp Thr Leu Tyr Gly Ser Tyr Thr Ile Glu Ala Asp Ala His Thr Leu
865                 870                 875                 880
Ala His Met Met Asn Cys Gly Ala Arg Met Ile Phe
                885                 890
<210>1071
<211>915
<212>PRT
<213>Chlamydia trachomatis
<400>1071
Ile Met Lys Phe Leu Ser Ala Thr Ala Val Phe Ala Ala Val Leu Ser
  1                 5                  10                  15
Ser Val Thr Glu Ala Ser Ser Ile Gln Asp Gln Ile Lys Asn Thr Asp
             20                  25                  30
Cys Asn Val Ser Lys Val Gly Tyr Ser Thr Ser Gln Ala Phe Thr Asp
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          35                  40                  45
Met Met Leu Ala Asp Asn Thr Glu Tyr Arg Ala Ala Asp Ser Val Ser
     50                  55                  60
Phe Tyr Asp Phe Ser Thr Ser Ser Gly Leu Pro Arg Lys His Leu Ser
 65                  70                  75                  80
Ser Ser Ser Glu Ala Ser Pro Thr Thr Glu Gly Val Ser Ser Ser Ser
                 85                  90                  95
Ser Gly Glu Asn Thr Glu Asn Ser Gln Asp Ser Ala Pro Ser Ser Gly
            100                 105                 110
Glu Thr Asp Lys Lys Thr Glu Glu Glu Leu Asp Asn Gly Gly Ile Ile
        115                 120                 125
Tyr Ala Arg Glu Lys Leu Thr Ile Ser Clu Ser Gln Asp Ser Leu Ser
    130                 135                 140
Asn Pro Ser Ile Glu Leu His Asp Asn Ser Phe Phe Phe Gly Glu Gly
145                 150                 155                 160
Glu Val Ile Phe Asp His Arg Val Ala Leu Lys Asn Gly Gly Ala Ile
                165                 170                 175
Tyr Gly Glu Lys Glu Val Val Phe Glu Asn Ile Lys Ser Leu Leu Val
            180                 185                 190
Glu Val Asn Ile Ser Xaa Glu Lys Gly Gly Ser Val Tyr Ala Lys Glu
        195                 200                 205
Arg Val Ser Leu Glu Asn Val Thr Glu Ala Thr Phe Ser Ser Asn Gly
    210                 215                 220
Gly Glu Gln Gly Gly Gly Gly Ile Tyr Ser Glu Gln Asp Met Leu Ile
225                 230                 235                 240
Ser Asp Cys Asn Asn Val His Phe Gln Gly Asn Ala Ala Gly Ala Thr
                245                 250                 255
Ala Val Lys Gln Cys Leu Asp Glu Glu Met Ile Val Leu Leu Thr Glu
            260                 265                 270
Cys Val Asp Ser Leu Ser Glu Asp Thr Leu Asp Ser Thr Pro Glu Thr
        275                 280                 285
Glu Gln Thr Lys Ser Asn Gly Asn Gln Asp Gly Ser Ser Glu Thr Lys
    290                 295                 300
Asp Thr Gln Val Ser Glu Ser Pro Glu Ser Thr Pro Ser Pro Asp Asp
305                 310                 315                 320
Val Leu Gly Lys Gly Gly Gly Ile Tyr Thr Glu Lys Ser Leu Thr Ile
                325                 330                 335
Thr Gly Ile Thr Gly Thr Ile Asp Phe Val Ser Asn Ile Ala Thr Asp
            340                 345                 350
Ser Gly Ala Gly Val Phe Thr Lys Glu Asn Leu Ser Cys Thr Asn Thr
        355                 360                 365
Asn Ser Leu Gln Phe Leu Lys Asn Ser Ala Gly Gln His Gly Gly Gly
    370                 375                 380
Ala Tyr Val Thr Gln Thr Met Ser Val Thr Asn Thr Thr Ser Glu Ser
385                 390                 395                 400
Ile Thr Thr Pro Pro Leu Val Gly Glu Val Ile Phe Ser Glu Asn Thr
                405                 410                 415
Ala Lys Gly His Gly Gly Gly Ile Cys Thr Asn Lys Leu Ser Leu Ser
            420                 425                 430
Asn Leu Lys Thr Val Thr Leu Thr Lys Asn Ser Ala Lys Glu Ser Gly
        435                 440                 445
Gly Ala Ile Phe Thr Asp Leu Ala Ser Ile Pro Thr Thr Asp Thr Pro
    450                 455                 460
Glu Ser Ser Thr Pro Ser Ser Ser Ser Pro Ala Ser Thr Xaa Glu Val
465                 470                 475                 480
Val Ala Ser Ala Lys Ile Asn Arg Phe Phe Ala Ser Thr Ala Glu Pro
                485                 490                 495
Ala Ala Pro Ser Leu Thr Glu Ala Glu Ser Asp Gln Thr Asp Gln Thr
            500                 505                 510
Glu Thr Ser Asp Thr Asn Ser Asp Ile Asp Val Ser Ile Glu Asn Ile
        515                 520                 525
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Leu Asn Val Ala Ile Asn Gln Asn Thr Ser Ala Lys Lys Gly Gly Ala
530 535 540
Ile Tyr Gly Lys Lys Ala Lys Leu Ser Arg Ile Asn Asn Leu Glu Leu
545 550 555 560
Ser Gly Asn Ser Ser Gln Asp Val Gly Gly Gly Leu Cys Leu Thr Glu
565 570 575
Ser Val Glu Phe Asp Ala Ile Gly Ser Leu Leu Ser His Tyr Asn Ser
580 585 590
Ala Ala Lys Glu Gly Gly Val Ile His Ser Lys Thr Val Thr Leu Ser
595 600 605
Asn Leu Lys Ser Thr Phe Thr Phe Ala Asp Asn Thr Val Lys Ala Ile
610 615 620
Val Glu Ser Thr Pro Glu Ala Pro Glu Glu Ile Pro Pro Val Glu Gly
625 630 635 640
Glu Glu Ser Thr Ala Thr Glu Asn Pro Asn Ser Asn Thr Glu Gly Ser
645 650 655
Ser Ala Asn Thr Asn Leu Glu Gly Ser Gln Gly Asp Thr Ala Asp Thr
660 665 670
Gly Thr Gly Val Val Asn Asn Glu Ser Gln Asp Thr Ser Asp Thr Gly
675 680 685
Asn Ala Glu Ser Gly Glu Gln Leu Gln Asp Ser Thr Gln Ser Asn Glu
690 695 700
Glu Asn Thr Leu Pro Asn Ser Ser Ile Asp Gln Ser Asn Glu Asn Thr
705 710 715 720
Asp Glu Ser Ser Asp Ser His Thr Glu Glu Ile Thr Asp Glu Ser Val
725 730 735
Ser Ser Ser Ser Lys Ser Gly Ser Ser Thr Pro Gln Asp Gly Gly Ala
740 745 750
Ala Ser Ser Gly Ala Pro Ser Gly Asp Gln Ser Ile Ser Ala Asn Ala
755 760 765
Cys Leu Ala Lys Ser Tyr Ala Ala Ser Thr Asp Ser Ser Pro Val Ser
770 775 780
Asn Ser Ser Gly Ser Asp Val Thr Ala Ser Ser Asp Asn Pro Asp Ser
785 790 795 800
Ser Ser Ser Gly Asp Ser Ala Gly Asp Ser Glu Gly Pro Thr Glu Pro
805 810 815
Glu Ala Gly Ser Thr Thr Glu Thr Pro Thr Leu Ile Gly Gly Gly Ala
820 825 830
Ile Tyr Gly Glu Thr Val Lys Ile Glu Asn Phe Ser Gly Gln Gly Ile
835 840 845
Phe Ser Gly Asn Lys Ala Ile Asp Asn Thr Thr Glu Gly Ser Ser Ser
850 855 860
Lys Ser Asn Val Leu Gly Gly Ala Val Tyr Ala Lys Thr Leu Phe Asn
865 870 875 880
Leu Asp Ser Gly Thr Leu Asp Glu Leu Ser Pro Ser Pro Gly Ile Leu
885 890 895
Ser Leu Leu Asn Leu Gln Gln Val Arg Leu Leu Glu Glu Leu Ser Thr
900 905 910
Leu Leu Leu
915

<210>1072
<211>118
<212>PRT
<213>Chlamydia trachomatis
<400>1072
Ser Asp Ser Ala Ser Val Arg Glu Gly Ala Ala Gly Ser Ala Val Glu
1 5 10 15
Ala Lys Asn Arg Phe Ile Leu Ala Glu Ala Thr Thr Ser Xaa Val Leu
20 25 30
Ala Gly Glu Glu Glu Glu Gly Val Glu Asp Ser Gly Val Ser Val Val
35 40 45

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Gly Ile Asp Ala Arg Ser Val Lys Ile Ala Pro Pro Asp Ser Phe Ala
50 55 60
Glu Phe Leu Val Arg Val Thr Val Phe Lys Leu Asp Lys Glu Ser Leu
65 70 75 80
Leu Val Gln Ile Pro Pro Pro Cys Pro Leu Ala Val Phe Ser Glu Lys
85 90 95
Ile Thr Ser Pro Thr Arg Gly Gly Val Val Ile Leu Ser Leu Val Val
100 105 110
Leu Val Thr Asp Met Val
115

<210>1073
<211>1194
<212>PRT
<213>Chlamydia trachomatis
<400>1073
Leu Ile Thr His Gln Lys Asn Met Val Val Glu Pro Leu Leu Pro Lys
1 5 10 15
Glu Ile Ser Gln Thr Tyr Thr Ser Asp Val Glu Thr Ile Pro Gly Ile
20 25 30
Thr Pro Val His Gly Glu Thr Val Ile Thr Gly Asn Lys Ser Thr Gly
35 40 45
Gly Asn Gly Gly Gly Val Cys Thr Lys Arg Leu Ala Leu Ser Asn Leu
50 55 60
Gln Ser Ile Ser Ile Ser Gly Asn Ser Ala Ala Glu Asn Gly Gly Gly
65 70 75 80
Ala Tyr Thr Cys Pro Asp Ser Phe Pro Thr Ala Asp Thr Ala Glu Gln
85 90 95
Pro Ala Ala Ala Ser Ala Ala Thr Ser Thr Pro Glu Ser Asp Pro Val
100 105 110
Ala Ser Thr Ala Leu Ser Thr Pro Ser Ser Ser Thr Val Ser Ser Leu
115 120 125
Thr Leu Leu Ala Ala Ser Ser Gln Ala Ser Pro Ala Thr Ser Asn Glu
130 135 140
Lys Thr Gln Asp Pro Asn Ala Asp Thr Asp Leu Leu Ile Asp Tyr Val
145 150 155 160
Val Asp Thr Thr Ile Ser Lys Asn Thr Ala Lys Lys Gly Gly Gly Ile
165 170 175
Tyr Ala Lys Lys Ala Lys Met Ser Arg Ile Asp Gln Leu Asn Ile Ser
180 185 190
Glu Asn Ser Ala Thr Glu Ile Gly Gly Gly Ile Cys Cys Lys Lys Ser
195 200 205
Leu Lys Leu Asp Ala Leu Val Ser Leu Ser Val Thr Glu Asn Leu Val
210 215 220
Gly Lys Glu Gly Gly Gly Leu His Ala Lys Thr Val Asn Ile Ser Asn
225 230 235 240
Leu Lys Ser Gly Phe Ser Phe Ser Asn Asn Lys Ala Asn Ser Ser Ser
245 250 255
Thr Gly Val Ala Thr Thr Ala Ser Ala Pro Ala Ala Ala Ala Ala Ser
260 265 270
Leu Gln Ala Ala Ala Ala Ala Ala Pro Ser Ser Pro Ala Thr Pro Thr
275 280 285
Tyr Ser Gly Val Val Gly Gly Ala Ile Tyr Gly Glu Gln Phe Thr Phe
290 295 300
Ser Gln Cys Ser Gly Thr Cys Gln Phe Ser Gly Asn Gln Ala Ile Asp
305 310 315 320
Asn Asn Pro Ser Gln Ser Ser Leu Asn Val Gln Gly Gly Ala Ile Tyr
325 330 335
Ala Lys Thr Ser Leu Ser Ile Arg Ser Ser Asp Ala Gly Thr Ser Tyr
340 345 350
Ile Phe Ser Gly Asn Ser Val Ser Thr Gly Lys Ser Gln Thr Thr Gly
355 360 365

Scanned

SEQUENCE LISTING

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Gln Ile Ala Gly Gly Ala Ile Tyr Ser Pro Thr Val Thr Leu Asn Cys
    370                 375                 380
Pro Ala Thr Phe Ser Asn Asn Thr Ala Ser Met Ala Thr Pro Lys Thr
385                 390                 395                 400
Ser Ser Ser Ser Gly Asn Ser Ile Lys Asp Thr Ile Gly Gly Ala Ile
                405                 410                 415
Ala Gly Thr Ala Ile Thr Leu Ser Gly Val Ser Arg Phe Ser Gly Asn
            420                 425                 430
Thr Ala Asp Leu Gly Ala Ala Ile Gly Thr Leu Ala Asn Ala Asn Thr
        435                 440                 445
Pro Arg Ala Thr Ser Gly Ser Gln Asn Ser Ile Thr Glu Lys Ile Thr
    450                 455                 460
Leu Lys Asn Ser Ser Phe Ile Phe Glu Arg Asn Gln Ala Asn Lys Arg
465                 470                 475                 480
Gly Ala Ile Tyr Ser Pro Ser Val Ser Ile Lys Gly Asn Asn Ile Thr
                485                 490                 495
Phe Asn Gln Asn Thr Ser Thr His Asp Gly Ser Ala Ile Tyr Phe Thr
            500                 505                 510
Lys Asp Ala Lys Ile Glu Ser Leu Gly Ser Val Leu Phe Thr Gly Asn
        515                 520                 525
Lys Val Thr Ala Thr Gln Ala Ser Ser Ala Thr Ser Gly Gln Asn Thr
    530                 535                 540
Asn Thr Ala Asn Tyr Gly Ala Ala Ile Phe Gly Asp Pro Gly Thr Thr
545                 550                 555                 560
Gln Ser Pro Gln Thr Asp Ala Ile Leu Thr Leu Leu Ala Ser Ser Gly
                565                 570                 575
Asn Ile Thr Phe Ser Asn Asn Ser Leu Gln Asn Asn Gln Gly Gly Thr
            580                 585                 590
Pro Ala Ser Lys Phe Cys Ser Ile Ala Gly Tyr Val Lys Leu Ser Leu
        595                 600                 605
Gln Ala Thr Lys Gly Lys Thr Ile Ser Phe Phe Asp Cys Val His Thr
    610                 615                 620
Ser Thr Lys Lys Thr Gly Ser Thr Gln Asn Val Tyr Glu Thr Leu Asp
625                 630                 635                 640
Ile Asn Lys Lys Glu Asn Ser Lys Pro Tyr Thr Gly Thr Ile Val Phe
                645                 650                 655
Ser Ser Glu Leu His Glu Asn Lys Ser Tyr Ile Pro Gln Asn Ala Ile
            660                 665                 670
Leu His Asn Gly Thr Leu Val Leu Lys Glu Lys Thr Glu Leu His Val
        675                 680                 685
Val Ser Phe Glu Gln Lys Glu Gly Ser Lys Leu Ile Met Glu Pro Gly
    690                 695                 700
Ala Val Leu Ser Asn Gln Asn Ile Ala Asn Gly Ala Leu Ala Ile Asn
705                 710                 715                 720
Gly Leu Thr Ile Asp Leu Ser Ser Met Gly Thr Pro Gln Ala Gly Glu
                725                 730                 735
Ile Phe Ser Pro Pro Glu Leu Arg Ile Val Ala Thr Thr Ser Ser Ala
            740                 745                 750
Ser Gly Arg Ser Gly Val Ser Arg Ser Ile Pro Thr Asn Pro Lys Gly
        755                 760                 765
Ile Ser Ala Ala Ala Pro Ser Gly Ser Ala Ala Thr Thr Pro Thr Met
    770                 775                 780
Ser Glu Asn Lys Val Phe Leu Thr Gly Asp Leu Thr Leu Ile Asp Pro
785                 790                 795                 800
Asn Gly Asn Phe Tyr Gln Asn Pro Met Leu Gly Ser Asp Leu Asp Val
                805                 810                 815
Pro Leu Ile Lys Leu Pro Thr Asn Thr Ser Asp Val Gln Val Tyr Asp
            820                 825                 830
Leu Thr Leu Ser Gly Asp Leu Phe Pro Gln Lys Gly Tyr Met Gly Thr
        835                 840                 845
Trp Thr Leu Asn Ser Asn Pro Gln Thr Gly Lys Leu Gln Ala Arg Trp
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    850                 855                 860
Thr Phe Asp Thr Tyr Arg Arg Trp Val Tyr Ile Pro Arg Asp Asn His
865                 870                 875                 880
Phe Tyr Ala Asn Ser Ile Leu Gly Ser Gln Asn Ser Met Ile Val Val
                885                 890                 895
Lys Gln Gly Leu Ile Asn Asn Met Leu Asn Asn Ala Arg Phe Asp Asp
            900                 905                 910
Ile Ala Tyr Asn Asn Phe Trp Val Ser Gly Val Gly Thr Phe Leu Ala
        915                 920                 925
Gln Gln Gly Thr Pro Leu Ser Glu Glu Phe Ser Tyr Tyr Ser Arg Gly
    930                 935                 940
Thr Ser Val Ala Ile Asp Ala Lys Pro Arg Gln Asp Phe Ile Leu Gly
945                 950                 955                 960
Ala Ala Phe Ser Lys Met Val Gly Lys Thr Lys Ala Ile Lys Lys Met
                965                 970                 975
His Asn Tyr Phe His Lys Gly Ser Glu Tyr Ser Tyr Gln Ala Ser Val
            980                 985                 990
Tyr Gly Gly Lys Phe Leu Tyr Phe Leu Leu Asn Lys Gln His Gly Trp
        995                 1000                1005
Ala Leu Pro Phe Leu Ile Gln Gly Val Val Ser Tyr Gly His Ile Lys
    1010                1015                1020
His Asp Thr Thr Ile Leu Tyr Pro Ser Ile His Glu Arg Asn Lys Gly
1025                1030                1035                1040
Asp Trp Glu Asp Leu Gly Trp Leu Ala Asp Leu Arg Ile Ser Met Asp
                1045                1050                1055
Leu Lys Glu Pro Ser Lys Asp Ser Ser Lys Arg Ile Thr Val Tyr Gly
            1060                1065                1070
Glu Leu Glu Tyr Ser Ser Ile Arg Gln Lys Gln Phe Thr Glu Ile Asp
        1075                1080                1085
Tyr Asp Pro Arg His Phe Asp Asp Cys Ala Tyr Arg Asn Leu Ser Leu
    1090                1095                1100
Pro Val Gly Cys Ala Val Glu Gly Ala Ile Met Asn Cys Asn Ile Leu
1105                1110                1115                1120
Met Tyr Asn Lys Leu Ala Leu Ala Tyr Met Pro Ser Ile Tyr Arg Asn
                1125                1130                1135
Asn Pro Val Cys Lys Tyr Arg Val Leu Ser Ser Asn Glu Ala Gly Gln
            1140                1145                1150
Val Ile Cys Gly Val Pro Thr Arg Thr Ser Ala Arg Ala Glu Tyr Ser
        1155                1160                1165
Thr Gln Leu Tyr Leu Gly Pro Phe Trp Thr Leu Tyr Gly Asn Tyr Thr
    1170                1175                1180
Ile Asp Val Gly Met Tyr Thr Tyr Arg Lys
1185                1190
<210>1074
<211>79
<212>PRT
<213>Chlamydia trachomatis
<400>1074
Asp Pro Leu Val Ala Leu Gly Val Phe Ala Leu Ala Arg Val Pro Ile
  1                 5                  10                  15
Ala Ala Pro Lys Ser Ala Val Phe Pro Glu Asn Arg Glu Thr Pro Asp
             20                  25                  30
Arg Val Met Ala Val Pro Ala Met Ala Pro Pro Met Val Ser Leu Ile
         35                  40                  45
Glu Phe Pro Glu Asp Glu Glu Val Phe Gly Val Ala Ile Glu Ala Val
     50                  55                  60
Leu Leu Glu Asn Val Ala Gly Gln Phe Asn Val Thr Val Gly Glu
 65                  70                  75
<210>1075
<211>111
<212>PRT
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<213>Chlamydia trachomatis
<400>1075
Val Gly Val Ala Gly Asp Asp Gly Ala Ala Ala Ala Ala Ala Cys Arg
1 5 10 15
Glu Ala Ala Ala Ala Ala Gly Ala Glu Ala Val Val Ala Thr Pro Val
20 25 30
Asp Glu Glu Phe Ala Leu Leu Phe Glu Lys Glu Lys Pro Asp Phe Arg
35 40 45
Leu Glu Ile Phe Thr Val Leu Ala Cys Lys Pro Pro Pro Ser Phe Pro
50 55 60
Thr Arg Phe Ser Val Thr Asp Lys Glu Thr Arg Ala Ser Ser Phe Lys
65 70 75 80
Asp Phe Leu Gln Gln Ile Pro Pro Pro Ile Ser Val Ala Glu Phe Ser
85 90 95
Glu Ile Phe Ser Trp Ser Met Arg Asp Ile Leu Ala Phe Leu Ala
100 105 110
<210>1076
<211>568
<212>PRT
<213>Chlamydia trachomatis
<400>1076
Asn Gly Cys Gln Leu Leu Arg Cys Leu Leu Leu Phe Ser Pro Gln Phe
1 5 10 15
Gln Gly Phe Ala Ser Gln Asn Leu Xaa Xaa Leu Asn Phe Ser Arg Val
20 25 30
Gly Thr Ser Ser Ser Thr Thr Phe Thr Glu Thr Val Gly Glu Ala Gly
35 40 45
Ala Glu Tyr Ile Val Ser Ser Asn Ala Ser Phe Thr Lys Phe Thr Asn
50 55 60
Ile Pro Thr Thr Asn Thr Thr Thr Pro Thr Asn Ser Asn Ser Ser Ser
65 70 75 80
Ser Asn Arg Glu Thr Ala Ser Val Ser Lys Asp Ser Asp Ser Thr Thr
85 90 95
Thr Thr Pro Asp Pro Lys Gly Gly Gly Ala Phe Tyr Asn Ala His Ser
100 105 110
Gly Val Leu Ser Phe Met Thr Arg Ser Gly Thr Glu Gly Ser Leu Thr
115 120 125
Leu Ser Glu Ile Lys Met Thr Gly Glu Gly Gly Ala Ile Phe Ser Gln
130 135 140
Gly Glu Leu Leu Phe Thr Asp Leu Thr Gly Leu Thr Ile Gln Asn Asn
145 150 155 160
Leu Ser Gln Leu Ser Gly Gly Ala Ile Phe Gly Gly Ser Thr Ile Ser
165 170 175
Leu Ser Gly Ile Thr Lys Ala Thr Phe Ser Ser Asn Ser Ala Glu Val
180 185 190
Pro Ala Pro Val Lys Lys Pro Thr Lys Pro Glu Ala Gln Thr Ala Gly
195 200 205
Glu Thr Ser Gly Ser Ser Ser Ser Ser Gly Asn Asp Ser Ala Ser Ser
210 215 220
Ser Ser Ser Ser Lys Ala Glu Pro Ala Ala Ala Asn Leu Gln Ser His
225 230 235 240
Phe Ile Cys Ala Thr Ala Thr Pro Ala Ala Gln Thr Asp Thr Glu Thr
245 250 255
Ser Thr Pro Ser His Lys Pro Gly Ser Gly Gly Ala Ile Tyr Ala Lys
260 265 270
Gly Asp Leu Thr Ile Ala Asp Ser Gln Lys Val Leu Phe Ser Ile Asn
275 280 285
Lys Ala Thr Lys Asp Gly Gly Ala Ile Phe Ala Glu Lys Asp Val Ser
290 295 300
Phe Glu Asn Ile Thr Ser Leu Lys Val Gln Thr Asn Gly Ala Glu Glu
305 310 315 320

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Lys Gly Gly Ala Ile Tyr Ala Lys Gly Asp Leu Ser Ile Gln Ser Ser
325 330 335
Lys Gln Ser Leu Phe Asn Ser Asn Tyr Ser Lys Gln Gly Gly Gly Ala
340 345 350
Leu Tyr Val Glu Gly Asn Ile Asn Phe Gln Asp Leu Glu Glu Ile Arg
355 360 365
Ile Lys Tyr Asn Lys Ala Gly Thr Phe Lys Thr Lys Lys Ile Thr Leu
370 375 380
Pro Ser Lys Ala Gln Ala Ser Ala Gly Asn Ala Asp Ala Trp Ala Ser
385 390 395 400
Ser Ser Pro Gln Ser Ser Ser Gly Ala Thr Thr Val Ser Asp Ser Gly
405 410 415
Asp Ser Ser Ser Gly Ser Asn Ser Asp Thr Ser Lys Thr Val Pro Val
420 425 430
Thr Ala Lys Gly Gly Gly Leu Tyr Thr Asp Lys Asn Leu Ser Ile Thr
435 440 445
Asn Ile Thr Gly Ile Ile Glu Ile Ala Ile Asn Lys Ala Thr Asp Val
450 455 460
Gly Gly Gly Ala Tyr Val Lys Gly Thr Leu Thr Cys Lys Asn Ser His
465 470 475 480
Arg Leu Gln Phe Leu Lys Asn Ser Ser Asp Lys Gln Gly Gly Gly Ile
485 490 495
Tyr Gly Glu Asp Asn Ile Thr Leu Ser Asn Leu Thr Gly Lys Thr Leu
500 505 510
Phe Gln Glu Asn Thr Ala Lys Lys Glu Gly Gly Gly Leu Phe Ile Lys
515 520 525
Gly Thr Asp Lys Ala Leu Thr Met Thr Gly Leu Asp Ser Phe Cys Leu
530 535 540
Ile Asn Asn Thr Ser Glu Lys His Gly Gly Gly Ala Phe Val Thr Gln
545 550 555 560
Arg Asn Leu Ser Asp Leu His Leu
565

<210>1077
<211>133
<212>PRT
<213>Chlamydia trachomatis
<400>1077
Lys Arg Met Gly Lys Ser Lys Asp Tyr Leu Tyr Pro Arg Thr Glu Val
1 5 10 15
Pro Phe Cys Ser Pro Leu Thr Thr Val Ala Glu Ser Leu Pro Ile Leu
20 25 30
Ser Ser Tyr Gly Tyr Gly Cys Val Cys Val Val Asn Glu Leu Phe Glu
35 40 45
Leu Leu Gly Ile Phe Thr Asp Gly Asp Leu Arg Arg Gly Leu Ser Glu
50 55 60
Tyr Gly Gly Asp Ile Leu Ala Tyr Pro Leu Gln Gln Ile Met Thr Arg
65 70 75 80
Asn Pro Lys Val Ile Ser Glu Asp Ser Asp Val Leu Leu Ser Leu Glu
85 90 95
Met Met Glu Ser Gly Asn Pro Val Thr Val Leu Pro Val Val Asp Ala
100 105 110
Gln Gln Gln Arg Phe Ile Val Gly Leu Leu His Met His Ala Leu Ala
115 120 125
Arg Ala Gly Leu Leu
130

<210>1078
<211>124
<212>PRT
<213>Chlamydia trachomatis
<400>1078
Asp Phe Phe Pro Val Val Glu Glu Asp Ser Glu Gly Asn Cys Ser Ser

```
  1               5                  10                  15
Lys Lys Ala Phe Ile Asp Leu Gly Asn Lys Thr Phe Phe Leu Arg Glu
             20                  25                  30
Ala Ser Pro Ala Ile Arg Val Thr Ser Leu Leu Gly Ile Asp Lys Lys
         35                  40                  45
Phe Ala Ser Asn Ala Thr Thr Ala Ser Leu Ala Leu Pro Phe Ser Gly
     50                  55                  60
Thr Ser Val Thr Arg Thr Leu Asn Ile Pro Ser Ser Lys His Thr Thr
 65                  70                  75                  80
Leu Phe Ser Arg Ala Phe Val Val Thr Leu Thr Ser Lys Thr Gln Lys
                 85                  90                  95
Pro Ser Asn Lys Ile Phe Ser Phe Ser Leu Leu Arg Ser Phe Lys Arg
            100                 105                 110
Lys Arg Thr Val Phe Thr Phe Pro His Thr Ile Asn
        115                 120
<210>1079
<211>111
<212>PRT
<213>Chlamydia trachomatis
<400>1079
Lys Ile Leu Trp Phe Phe Met Val Ser Arg Val Pro Gly Ser Ser Asp
  1               5                  10                  15
Pro Val Asp Val Asn Ala Leu Ser Asn Leu Ser Pro Val Gln Asn Gln
             20                  25                  30
Asn Ser Gly Val Ser Val Ser Ala Ile Tyr Leu Pro Asn Glu Thr Val
         35                  40                  45
Ser Lys Ser Gly Lys Thr Leu Lys Tyr Ser Thr Glu Leu Ile Ala Gly
     50                  55                  60
Ile Val Cys Ile Arg Gly Cys Ile Ser Asn Cys Gly Tyr Arg Pro Asn
 65                  70                  75                  80
Asp Thr Ser Ser Trp Ser Ser Ala Ile Asp Cys Phe Ser Asp Cys Phe
                 85                  90                  95
Phe Arg Asn Phe Cys Arg Trp Ser Tyr His Val Lys Lys Ser Tyr
            100                 105                 110
<210>1080
<211>76
<212>PRT
<213>Chlamydia trachomatis
<400>1080
Leu Gln Val Leu Phe Val Leu Gly Val Ala Leu Ala Ile Val Ala Ile
  1               5                  10                  15
Ala Leu Thr Ile Leu Ala Pro Gly Val Pro Gln Ser Ile Val Leu Ala
             20                  25                  30
Ile Ala Phe Ser Gly Ile Ser Val Gly Gly Val Thr Thr Leu Arg Ser
         35                  40                  45
Leu Ile Asn Gly Ile Lys Thr Val Val Ala Pro Arg Met Thr Phe Arg
     50                  55                  60
Gln Arg Ala Lys Ser Ala Leu Ser Leu Val Gln Asp
 65                  70                  75
<210>1081
<211>109
<212>PRT
<213>Chlamydia trachomatis
<400>1081
Ala Arg Leu Pro Gly Glu Ala Ser Lys Ala Ile Ala Arg Ile Met Pro
  1               5                  10                  15
Thr Ala Arg Arg Glu His Ala Lys Ile Met Glu Ile Leu Ile Gln Glu
             20                  25                  30
Ala Pro Asp Arg Trp Phe Gly Ile Phe Glu Ser Glu Val Val Glu Gly
         35                  40                  45
Glu Thr Gly Ala Tyr Ser Lys Thr Glu Gly Phe Cys Thr Thr Gly Ile
```

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     50                  55                  60
Cys Phe Tyr Tyr Gln Thr Lys Lys Phe Val Asn Ser Leu Gly Arg Glu
 65                  70                  75                  80
Gly Leu Glu Glu Val Ser Ser Ser Lys Pro Leu His Phe Thr Lys Lys
                 85                  90                  95
Ala Tyr Leu Pro Arg Leu Ile Lys Val Lys Gly Tyr Arg
            100                 105
```

<210>1082
<211>96
<212>PRT
<213>Chlamydia trachomatis

```
<400>1082
Met Thr Lys Asp Pro Glu Lys Lys Ala Val Leu Tyr Arg Tyr Ala Glu
  1               5                  10                  15
Gln Leu Ile Glu Asp Thr Ile Leu Phe Thr Asp Ala Glu Asn Pro Leu
            20                  25                  30
Pro Ser Pro Ser Ser Ser Tyr Leu Arg Tyr Gln Val Ser Pro Glu Thr
        35                  40                  45
Arg Thr Gln Leu Met Leu Ala Ile Leu Glu Thr Leu Val Ser Ser Lys
     50                  55                  60
Thr Asp Glu Asp Ile Arg Val Phe Leu Ser Leu Met Lys Lys Thr His
 65                  70                  75                  80
Tyr Lys Asn Ile Pro Ile Leu Ser Gly Leu Leu Met Arg Ile Val Glu
                 85                  90                  95
```

<210>1083
<211>85
<212>PRT
<213>Chlamydia trachomatis

```
<400>1083
Leu Thr Ser Ser Lys Trp Thr Ile Val Ser Leu Thr Phe Thr Arg Pro
  1               5                  10                  15
Leu Leu Met Ser Ser Cys Met Ile Gly Pro Phe Lys Pro Ala Ala Leu
            20                  25                  30
Ile Phe Ser Gly Ile Asn Phe Val Val Ser Gly Ser Val Met Arg His
        35                  40                  45
Pro Arg Val Ser Thr Arg Trp Ser Ser Trp Arg Asp Ser Ile Arg Lys
     50                  55                  60
Leu Pro Lys Ser Ser Thr Ile Pro Ser Arg Ser Ile Gly Cys Ser Ile
 65                  70                  75                  80
Thr Leu Ile Val Ser
                 85
```

<210>1084
<211>131
<212>PRT
<213>Chlamydia trachomatis

```
<400>1084
Ser Ala Phe Glu Thr Ile Gln Glu Ala Ile Met Gln Leu Pro Ser Ile
  1               5                  10                  15
Ile Gln Ser Phe Phe Phe Pro Lys Ala Pro Pro Ser Pro Leu Lys Lys
            20                  25                  30
Pro Ile Tyr Gln Gln Thr Glu Arg Ile Ile Asn Ile Ala Tyr Leu Val
        35                  40                  45
Leu Leu Ser Leu Ser Val Val Gly Ile Ile Ser Gly Val Phe Leu Ser
     50                  55                  60
Leu Ser Phe Pro Leu Leu Gly Ala Gly Ile Cys Leu Ile Ser Leu Ala
 65                  70                  75                  80
Val Gly Ser Cys Leu Leu Val Leu Phe Pro Leu Leu Pro Asp Ile Glu
                 85                  90                  95
Lys Ile Ile Ala Leu Arg Glu Pro Lys Val Ser Ile Thr Thr Ser Ser
            100                 105                 110
Pro Leu Pro Thr Leu Met Arg Ser Phe Lys Ser Ile Gly Leu Gly Lys
```

```
        115                 120                 125
Ala Ala His
    130
<210>1085
<211>125
<212>PRT
<213>Chlamydia trachomatis
<400>1085
Val Asn Ser Thr Asn Asn Thr Asp Ser Gln Asn Leu Asp Pro Asn Ala
  1               5                  10                  15
Ser Glu Val Glu Lys Leu Leu Asp Glu Ser Ala Glu Ala Glu Glu Lys
             20                  25                  30
Val Asp Asp His Thr Pro Pro Ser Glu Leu Phe Ile Leu Pro Leu Asn
         35                  40                  45
Lys Arg Pro Phe Phe Pro Gly Met Ala Ala Pro Leu Leu Ile Glu Ala
     50                  55                  60
Gly Pro His Tyr Glu Val Leu Thr Leu Leu Ala Lys Ser Ser Gln Lys
 65                  70                  75                  80
His Ile Gly Leu Val Leu Thr Lys Lys Glu Asp Ala Asn Thr Leu Lys
                 85                  90                  95
Val Gly Phe Asn Gln Leu His Arg Val Gly Val Ser Ala Arg Ile Leu
            100                 105                 110
Arg Ile Met Pro Ile Glu Gly Gly Arg Leu Lys Cys Tyr
        115                 120                 125
<210>1086
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>1086
Met Ile Arg Met Phe Lys Ile Leu Pro Leu Asp Gly Leu Ile Tyr Asn
  1               5                  10                  15
Leu Phe Tyr Pro Thr Leu Val Met Pro Ile Phe Leu Met Ile Pro Leu
             20                  25                  30
Ser Phe Leu Asn Pro Leu Leu Ser His Leu Ser Glu Ser Tyr Ile Ser
         35                  40                  45
Trp Ile Leu Asp Leu Pro Trp Leu His Ala Pro Asn Val Leu Ile Ser
     50                  55                  60
Leu Thr Ser Ala Pro Pro Thr Leu Glu Trp Ile Thr Leu Val Ser Ile
 65                  70                  75                  80
Ile Leu Val Tyr Ile Gly Ala Leu Ser Ser Val Gly Lys Ala Val Asn
                 85                  90                  95
Thr Ala Val Asp His Ser Ile Ile Leu
            100                 105
<210>1087
<211>158
<212>PRT
<213>Chlamydia trachomatis
<400>1087
Trp Asn Ser Ser Gly Ser Ala Cys His Arg Tyr Cys Val Asp Phe Cys
  1               5                  10                  15
Pro Tyr Leu Cys Leu Ser Ser Ser Tyr Arg Val Tyr Tyr Trp Ser Phe
             20                  25                  30
Phe Arg Thr Ser Asn Lys Leu Val Ser Cys Leu Trp Ile Pro Val Gln
         35                  40                  45
Ile Arg Ser Gly Tyr Ile Ala Asp Gln Glu Leu Phe Asp Lys Gln Glu
     50                  55                  60
Lys Arg Ile Arg Gln Ala Ile Met Gln Cys Arg Leu Ile Arg Asn Gln
 65                  70                  75                  80
Met Val Leu Gln Arg Arg Leu Asp Ile Leu Gln Lys Arg Ala His Arg
                 85                  90                  95
Pro Gly Gln Ser Gln Thr Ile Thr Ile Arg Pro Leu Thr Asn Arg Ile
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            100                 105                 110
Ser Leu Pro Glu Glu Met Glu His Glu Ile Leu Gly Lys Lys Pro Gln
        115                 120                 125
Val Val Ile Ala Met Leu Asp Asn Lys Ile Ala Gln Leu Asn Gln Ser
    130                 135                 140
Leu Val Gln Leu Tyr Asp Arg Pro Thr Arg Val Ile Glu Gln
145                 150                 155
<210>1088
<211>83
<212>PRT
<213>Chlamydia trachomatis
<400>1088
Val Thr Arg Ala Val His Val Ser Val Val Thr Ile Ser Cys Phe Val
  1               5                  10                  15
Leu Asn Val Gly Ser Val Asn Cys Asn Thr Ala Ser Phe Phe Phe Arg
            20                  25                  30
Ser Val Val Asn Arg Ala Ile Ile Thr Lys Ile Ser Gln Pro Ile Ser
        35                  40                  45
Arg Gln Arg Thr Arg Asn Ser Ser Cys Gln Arg Ser Leu Thr Met Val
    50                  55                  60
Asn Val Ala Asn Gly Pro Tyr Val Asp Met Arg Leu Ile Thr Leu Lys
65                  70                  75                  80
Ser Phe Phe

<210>1089
<211>112
<212>PRT
<213>Chlamydia trachomatis
<400>1089
Thr Leu Ser Glu Thr Leu Thr Ile Pro Arg Ser Ile Arg Pro Val Thr
  1               5                  10                  15
Val Pro Arg Pro Glu Ile Glu Asn Thr Ser Ser Met Gly Ile Lys Lys
            20                  25                  30
Gly Leu Ser Ile Ser Leu Ser Gly Val Gly Ile Leu Ser Ser Thr Ala
        35                  40                  45
Cys Ile Ser Ser Arg Thr Phe Ser Met Tyr Ala Ala Ser Pro Ser Lys
    50                  55                  60
Ala Phe Arg Ala Glu Pro Leu Met Ile Gly His Pro Leu Tyr Pro Phe
65                  70                  75                  80
Ser Ser Arg Ser Ser Ala Asn Ser Ile Ser Thr Lys Ser Thr Asn Ser
                85                  90                  95
Ala Ser Ser Ser Glu Ile Met Ser Ile Leu Leu Arg Lys Thr Thr Met
            100                 105                 110
<210>1090
<211>82
<212>PRT
<213>Chlamydia trachomatis
<400>1090
Met Gly Gln Asp His Arg Arg Lys Phe Leu Lys Lys Val Ser Phe Ala
  1               5                  10                  15
Lys Lys Gln Ala Ala Phe Ala Gly Ser Phe Ile Glu Glu Ile Lys Lys
            20                  25                  30
Ile Glu Trp Val Asn Lys Arg Asp Leu Lys Arg Tyr Val Lys Ile Val
        35                  40                  45
Leu Met Asn Ile Phe Gly Xaa Gly Phe Ser Ile Tyr Cys Val Asp Leu
    50                  55                  60
Ala Leu Arg Lys Ser Leu Ser Leu Leu Gly Glu Val Thr Ser Phe Phe
65                  70                  75                  80
Phe Gly

<210>1091
```

<211>101
<212>PRT
<213>Chlamydia trachomatis
<400>1091

```
Leu Cys Ser Ser Leu Thr Asn Tyr Ser Thr Ser Thr Pro Met Leu Arg
  1               5                  10                  15
Ala Val Pro Ser Thr Ile Leu Ser Ala Asp Ser Lys Arg Thr Thr Ser
            20                  25                  30
Met Ser Phe Ile Phe Cys Ser Ala Ile Ala Val Ile Cys Ala Arg Val
        35                  40                  45
Asn Leu Pro Thr Leu Phe Leu Leu Gly Ile Leu Asp Pro Asp Ser Lys
    50                  55                  60
Pro Lys Ala Phe Leu Ile Asn Glu Glu Thr Gly Asp Cys Phe Ile Thr
65                  70                  75                  80
Lys Xaa Lys Val Leu Ser Glu Tyr Thr Val Ile Thr Thr Gly Ser Lys
                85                  90                  95
Ser Pro Gly Arg Ser
            100
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<210>1092
<211>98
<212>PRT
<213>Chlamydia trachomatis
<400>1092

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Leu Ser Asn Arg Ala Ser Thr Ala Ser Cys Asn Ile Arg Phe Ser Leu
  1               5                  10                  15
Arg Thr Met Thr Ser Gly Val Phe Ser Arg Lys Ile Ala Phe Lys Arg
            20                  25                  30
Leu Phe Arg Leu Ile Thr Leu Arg Tyr Arg Ser Phe Lys Ser Glu Val
        35                  40                  45
Ala Lys Arg Pro Pro Ser Lys Gly Thr Lys Gly Arg Lys Ser Gly Gly
    50                  55                  60
Thr Thr Gly Met Phe Phe Asn Thr Ile His Ser Gly Arg Phe Glu Glu
65                  70                  75                  80
Asp Thr Lys Pro Ser Thr Ile Phe Arg Arg Leu Ala Ser Phe Ile Leu
                85                  90                  95
Ala Cys
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<210>1093
<211>130
<212>PRT
<213>Chlamydia trachomatis
<400>1093

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Val Leu Asn Lys Lys Asp Val Met Glu Lys Lys Glu Gln Ala Leu Cys
  1               5                  10                  15
Phe Ser Cys Pro Tyr Cys Cys Asp Gly Asn Val Ala Phe Ser Val Ile
            20                  25                  30
Asp Leu Glu Asn Cys Leu Val Cys Asp Cys Cys Glu Ala Ser Phe Met
        35                  40                  45
Phe Asp Ala Glu Met Cys Asp Ala Ile Arg Arg Phe Ser Ala Leu Cys
    50                  55                  60
Leu Arg Ile Tyr Glu Ala Lys Ala Leu Leu Gly Glu Ala Ala Val Ser
65                  70                  75                  80
Val Ser Val Gln Gly Gln Arg Ile Asp Val Pro Phe Gln Leu Leu Phe
                85                  90                  95
Ser Arg Phe Pro Val Phe Leu Asn Leu Asn Leu Ala Gly Lys Leu Val
            100                 105                 110
Arg Val Arg Phe Ile Phe Asp Ser Leu Arg Gly Glu Val Leu Tyr His
        115                 120                 125
Arg Gly
    130
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<210>1094

<211>95
<212>PRT
<213>Chlamydia trachomatis
<400>1094
Asp Gln Arg Ser Leu Glu Ala Thr Ala Leu Leu Pro Asn Ser Leu Thr
1 5 10 15
Ser Leu Ile Thr Lys Ser Ala Gly Glu Gln Leu Leu Val Ser Arg Phe
20 25 30
Lys Thr Phe Asn Pro Ser Glu Ser Phe Arg Thr Phe Ser Glu Ser Leu
35 40 45
Ser Leu Leu Phe Asp Lys Asn Ser Thr Ala Pro Ile Ser Arg His Ala
50 55 60
Glu Lys Asn Ser Asp Phe Leu Arg Pro Ile Asn Arg Tyr Leu Ser Thr
65 70 75 80
Ser Thr Arg Met Gln Thr Thr Pro Tyr Ala Ala Glu Phe Phe Ser
85 90 95

<210>1095
<211>88
<212>PRT
<213>Chlamydia trachomatis
<400>1095
Leu Leu Ser Leu Pro Ile Val His Gly Leu Leu Trp Leu Gly Ile Phe
1 5 10 15
Gly Cys Lys Ser Lys Lys Lys Tyr Ser Ser Met Thr Val Ile Val Leu
20 25 30
Cys Cys Phe Ala Phe Pro Glu Lys Lys Leu Val Gly Gly Phe Ser Phe
35 40 45
Leu Glu Asn Ile Leu Arg Thr Phe Ser Thr Gly Gly Gln Glu Ile Gln
50 55 60
Gln Ser Phe Leu Gly Ser Pro Gln Arg Asp Phe Leu Thr Asn Ser Leu
65 70 75 80
Asp Phe Cys Ala Tyr Pro Thr Phe
85

<210>1096
<211>110
<212>PRT
<213>Chlamydia trachomatis
<400>1096
Ile Gly His Asn Ile Ser Ile Ile Cys Arg Ser Cys Ser Cys Glu Val
1 5 10 15
Ile Leu Trp Leu Leu Met Arg Leu Phe Gly Trp Ser Cys Gly Asn Ser
20 25 30
Phe Cys Ser Phe Leu Ile Ser Leu Arg Phe Leu Arg Leu Cys Phe Leu
35 40 45
Gly Phe Leu Lys Ser Gly Ser Leu Ser Cys Ser Ser Ile Tyr Arg Ile
50 55 60
Phe Ile Ala Phe Tyr Thr Cys Ser Gln Ser Phe Leu Arg Ile Ile Ala
65 70 75 80
Gln Cys Arg Ser Asn Thr Ser Val Ser Phe Lys Ile Leu Thr Tyr Arg
85 90 95
Thr Ser Arg Thr Pro Arg Phe Thr Ser Ser Leu Phe Phe Cys
100 105 110

<210>1097
<211>146
<212>PRT
<213>Chlamydia trachomatis
<400>1097
Leu Gly Glu Thr Ser Thr Val Ala Cys Leu Leu Gly Ala Gly Leu Leu
1 5 10 15
Leu Leu Thr Gly Ile Ala Ser Trp Arg Thr Met Leu Ser Phe Gly Leu
20 25 30

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Ser Ala Phe Phe Phe Ala Trp Phe Phe Lys Ile Met Ser Ile Leu Thr
         35                  40                  45
Thr Gly Asn Ala Gly Ala Trp Ala Pro Ala Lys Phe Phe Ile Pro Ala
     50                  55                  60
Tyr Arg His Leu Cys Ile Gly Gly Leu Ala Phe Gly Leu Val Phe Met
 65                  70                  75                  80
Ala Thr Asp Pro Val Ser Ser Pro Ala Met Lys Leu Ala Lys Trp Leu
                 85                  90                  95
Tyr Gly Ala Phe Ile Gly Phe Leu Thr Ile Leu Ile Arg Leu Ile Asn
            100                 105                 110
Pro Ala Tyr Pro Glu Gly Val Met Leu Ala Ile Leu Leu Gly Asn Val
        115                 120                 125
Phe Ala Pro Leu Phe Asp Asn Ile Ala Leu Lys Gln Tyr Arg Gln Arg
    130                 135                 140
Arg Ile
145
<210>1098
<211>142
<212>PRT
<213>Chlamydia trachomatis
<400>1098
Leu Asn Ile Gly Glu Ile Ser Ala Ile Cys Ser Thr Cys Ser Ala Leu
  1               5                  10                  15
Ser Pro His Leu Ser Leu Tyr Leu Tyr Glu Leu Met Pro Glu Thr Leu
            20                  25                  30
Ala Leu Tyr Arg Cys Ala Cys Leu Gly Asn Arg Ser Gly Glu Gln Ser
        35                  40                  45
Phe Ser Lys Ala Ala Leu Arg Ala Leu Ile Leu Asn Gln Cys Ser Ile
    50                  55                  60
Asp Arg Ile Ile Phe Ser Ser Lys Asp Ile Glu Arg Asn Ile Val Glu
 65                  70                  75                  80
Ser Ile Ala Arg Tyr Leu Lys Val Pro Cys Glu Lys Arg Ser Trp Tyr
                 85                  90                  95
Arg Lys Arg Lys Ala Leu Asp Ser Ala Glu Asn Ile Cys Ile Leu Ser
            100                 105                 110
Thr Tyr Pro Phe Asn Arg Arg Val Arg Glu Glu Ile Phe Ser Gln Val
        115                 120                 125
Pro Asp Asn Ala Ile Phe Met Ser Leu Phe Pro Leu Ala His
    130                 135                 140
<210>1099
<211>106
<212>PRT
<213>Chlamydia trachomatis
<400>1099
Val Glu Ser Asn Phe Arg Met Gly Arg Arg Arg Thr Arg Arg Ala Pro
  1               5                  10                  15
His Phe Trp Ile Phe Val Pro Ser Ser Arg Ala Leu Ser Glu Lys Leu
            20                  25                  30
Ile Leu Phe Phe Glu Ala Leu Val Ile Leu Asp Pro Leu Ser Val Tyr
        35                  40                  45
Asp Phe Gln Thr Leu Gly Gly Leu Tyr Leu Gln Ile Ser Glu Asn Thr
    50                  55                  60
Lys Ala Leu Tyr Val Leu Asp Gln Ala Leu Arg Met Gln Gly Asp His
 65                  70                  75                  80
Leu Pro Ser Leu Leu Asn Lys Thr Lys Ala Leu Phe Cys Leu Gly Arg
                 85                  90                  95
Ile Glu Glu Ala Ser Ala Ile Xaa Pro Thr
            100                 105
<210>1100
<211>95
<212>PRT
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<213>Chlamydia trachomatis
<400>1100
Met Asn Arg Tyr Arg Phe Ser Arg Leu Leu Val Cys Leu Ser Leu Leu
1 5 10 15
Cys Cys Ala Leu Tyr Arg Tyr Ile Asp Lys Gln Asn Asp Leu Thr Lys
20 25 30
Leu Arg Leu Glu Ile Pro Cys Leu Trp Ala Gln Leu Arg Gln Ile Glu
35 40 45
Gln Glu Asn Val Ala Leu Ser Phe Leu Leu Glu Lys Leu Glu Ser Pro
50 55 60
Glu His Leu Leu Gln Ile Ala Phe Leu Pro Glu Tyr Gln Tyr Leu Glu
65 70 75 80
Tyr Leu Ser Glu Glu Lys Ile Ser Val Leu Ala Tyr Glu Ser Pro
85 90 95

<210>1101
<211>110
<212>PRT
<213>Chlamydia trachomatis
<400>1101
Val Glu Leu Leu Pro His Glu Lys Gln Val Val Glu Tyr Glu Lys Thr
1 5 10 15
Ile Ala Glu Phe Lys Glu Lys Asn Lys Glu Asn Ser Leu Leu Ser Ser
20 25 30
Ser Glu Ile Gln Lys Leu Asp Lys Arg Leu Asp Arg Leu Lys Glu Lys
35 40 45
Ile Tyr Ser Asp Leu Thr Pro Trp Glu Arg Val Gln Ile Cys Arg His
50 55 60
Pro Ser Arg Pro Arg Thr Val Asn Tyr Ile Glu Gly Met Cys Glu Glu
65 70 75 80
Phe Val Glu Leu Cys Gly Asp Arg Thr Phe Arg Asp Asp Pro Ala Val
85 90 95
Val Gly Gly Ser Gln Arg Phe Xaa Asp Ser Val Ser Cys Leu
100 105 110

<210>1102
<211>91
<212>PRT
<213>Chlamydia trachomatis
<400>1102
Met Leu Ile Pro Ile Ala Glu Glu Ile Phe Phe Arg Gly Ile Leu Gln
1 5 10 15
Thr Phe Phe Lys Asn Thr Phe Ser Arg Ser Lys Ala Val Val Thr Ser
20 25 30
Ser Leu Ile Phe Ala Ile Thr His Ile Glu Ala Ser Leu Gly Ser Phe
35 40 45
Ile Phe Val Pro Thr Leu Phe Val Phe Ser Leu Cys Ala Gly Phe Ile
50 55 60
Tyr Glu Lys Val Arg His Ile Ala Ala Pro Val Thr Leu His Ile Leu
65 70 75 80
Phe Asn Ser Cys Gln Leu Ala Leu Leu Ser Leu
85 90

<210>1103
<211>154
<212>PRT
<213>Chlamydia trachomatis
<400>1103
Met Val Gly Leu Gly Leu Leu Leu Val Phe Val Gly Ile Ser Ile Phe
1 5 10 15
Leu Ala Asn Gly Phe Phe Val Trp Pro Lys Pro Glu Lys His Thr His
20 25 30
Leu Pro Phe Ser Leu Val Cys Leu Gly Ala Val Leu Leu Leu Leu Pro
35 40 45

Ala Leu Leu Pro Thr Gly Asp Pro Leu Ser Ser Ile Ser Lys Ala Ser
50 55 60
Phe His Gly Ile Phe Val Phe Ser Ala Phe Leu Phe Leu Leu Leu Gly
65 70 75 80
Leu Pro Ala Pro Ile Thr Gln Ser Ile Leu Tyr Ala Gly Arg Thr Thr
85 90 95
Ser Ser Thr Ser Trp Leu Leu Ala Ile Arg Ala Gly Ala Arg Met Trp
100 105 110
Val Ile Thr Ile Thr Ala Thr Gln Ile Leu Ala Arg Leu Leu Gln Leu
115 120 125
Val Leu Pro Leu Ile Leu Pro Lys Gln Leu Phe Gln Glu Gln Val Ile
130 135 140
Thr Glu Glu Ile Arg Glu Gln Pro Ile Asn
145 150

<210>1104
<211>98
<212>PRT
<213>Chlamydia trachomatis
<400>1104
Arg Val Ser Phe Pro Cys Thr Trp Lys Ile Thr Ile Pro Pro Leu Tyr
1 5 10 15
Ile Lys Lys Phe Asn Val Glu Ser Leu Ser Asp Val Asp Ala Ser Asn
20 25 30
Ile Tyr Ser Lys Thr Leu His His Phe Phe Leu Leu Ala Ile Gln Met
35 40 45
Ile Pro Thr Pro Arg Lys Thr Ile Gly Ile Asp Asn His Cys Pro Ile
50 55 60
Val Asn Met Phe Ser Ser Pro Ser His Ala Pro Trp Cys Val Leu Lys
65 70 75 80
Asn Ser Ala Gln Lys Arg Ile Thr Ala Thr Pro Ile Lys Ala Pro Ala
85 90 95
Ala Leu

<210>1105
<211>77
<212>PRT
<213>Chlamydia trachomatis
<400>1105
Tyr Ser Leu Arg Ser Ser Glu Ile Ser Ser Ser Arg Arg Pro Lys Met
1 5 10 15
Asn Ile Cys Ser Phe Pro Ile Cys Ser Ala Ile Ser Ile Leu Ala Pro
20 25 30
Ser Ile Val Pro Ile Val Lys Ala Pro Phe Lys Ala Asn Phe Ile Phe
35 40 45
Pro Val Pro Glu Ala Ser Ile Pro Ala Val Glu Ile Cys Ser Asp Lys
50 55 60
Ser Val Ala Gly Met Ile Ala Ser Ala Lys Glu Thr Leu
65 70 75
<210>1106
<211>157
<212>PRT
<213>Chlamydia trachomatis
<400>1106
Asn Ser Lys Arg Thr Asn Glu Thr Glu Gly His Ser Ser Ile Met Leu
1 5 10 15
Arg Asn Cys Pro Leu Phe Asn Ile Asn Val Phe Thr Arg Val Ile Ala
20 25 30
Ser Ala Glu Tyr Ser Arg Thr Leu Leu Leu Lys Lys Leu Ser Ser Pro
35 40 45
Lys Gln Ser Arg Gly Leu Ser Arg Thr Leu Ile Val Gly Ser Phe Ala
50 55 60

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Lys Ile Leu Thr His Pro Ser Ala Ile Thr Tyr Arg Leu Lys Leu Gly
 65                  70                  75                  80
Cys Pro Ser Glu Lys Ile Ser Glu Pro Ala Leu Lys Ser Met Thr Ser
                85                  90                  95
Asp Leu Ser Ala Ile Glu Ser Lys Thr Ser Met Ser Lys Asp Ala Asn
            100                 105                 110
Lys Xaa Val Phe Phe Arg Arg Lys Ala Leu Ser Ile Arg Phe Lys Glu
        115                 120                 125
Val Pro Pro Thr Lys Asp Leu Lys Leu Gly Thr Ser Tyr Val Phe Pro
    130                 135                 140
Gly Gln Tyr Arg Gly Phe Leu Phe Leu Ser Lys Ala Leu
145                 150                 155
<210>1107
<211>103
<212>PRT
<213>Chlamydia trachomatis
<400>1107
Leu Ser Lys Asn Phe Leu Ser Pro Ile Glu His Met Ile Arg Thr Thr
  1               5                  10                  15
Gly Ile Pro Val Thr Leu Val Arg Tyr Gly Ser Leu Phe Ser Phe Phe
            20                  25                  30
Phe Asn Pro Asn Arg Pro Asn Asn Leu Ala Asp Ala Gln Leu Ser Asp
        35                  40                  45
Ile Glu Ala Phe Gln Lys Phe Tyr Gln Ser Ala Phe Ser Lys Gly Val
    50                  55                  60
Tyr Leu Ser Pro Ser Pro Phe Glu Ala Ser Phe Leu Ser Ala Ala His
 65                  70                  75                  80
Ser Met Glu Ser Leu Asp Tyr Ala Gln Thr Ala Leu Ile Glu Ser Leu
                85                  90                  95
Glu Gln Val Phe Ser Leu Val
            100
<210>1108
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>1108
Asp Pro Val Lys Thr Pro Leu Leu Val Phe Ile Ser Leu Met Arg Ser
  1               5                  10                  15
Leu Ser Leu Leu Leu Cys Val Ser Leu Ile Tyr Cys Ala Thr Thr Ala
            20                  25                  30
Phe Cys Ser Ser Glu Val Arg Arg Ser Thr Lys Gly Cys Ser Gly Ala
        35                  40                  45
Lys Ala Lys Lys Glu Thr Pro Ile Lys Val Ser Gly Leu Val Val Lys
    50                  55                  60
Thr Ser Ile Ala Pro Cys Ser Val Ala Lys Leu Thr Glu Ala Pro Glu
 65                  70                  75                  80
Asp Phe Pro Ile Gln Phe Phe Cys Asn Cys Leu Thr Leu Ser Gly Gln
                85                  90                  95
Ser Ser Ser Ser Ser Pro Ser Arg Ser
            100                 105
<210>1109
<211>96
<212>PRT
<213>Chlamydia trachomatis
<400>1109
Val Leu Ile Lys His Ile Leu Pro Tyr Ala Leu Phe Pro Val Ile Ser
  1               5                  10                  15
Tyr Ser Ala Phe Leu Ile Thr Thr Leu Met Thr Gly Thr Phe Ser Ile
            20                  25                  30
Glu Asn Leu Phe Cys Ile Pro Gly Leu Gly Lys Trp Phe Ile Cys Ser
        35                  40                  45
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Ile Lys Gln Arg Asp Tyr Pro Ile Thr Leu Gly Leu Ser Val Phe Tyr
     50                  55                  60
Gly Ala Phe Phe Met Leu Thr Ser Leu Cys Cys Asp Leu Leu Gln Ala
 65                  70                  75                  80
Trp Ile Asp Pro Gln Ile Arg Tyr Ser Tyr Gly Lys Glu Arg Ser Lys
                 85                  90                  95
<210>1110
<211>112
<212>PRT
<213>Chlamydia trachomatis
<400>1110
Leu Asp Phe Lys Thr Phe Met Ala Thr Thr Val Asn Pro Asn Tyr Ser
  1               5                  10                  15
Leu Pro Phe Cys Glu Lys Met Val Ser Ser Ala Thr Leu Ala Ala His
            20                  25                  30
Ser Phe Phe Asn His Leu Lys Leu Leu Ile Pro Leu Leu Val Gly Tyr
        35                  40                  45
Phe Cys Thr Ile Ile Arg Ser Ser Asn Leu Asn Arg Cys Asp Tyr Asp
     50                  55                  60
Tyr Thr Leu Tyr Cys Ser Lys Leu Leu Ser Phe Ser Gly Ser Tyr Phe
 65                  70                  75                  80
Gly Tyr Arg Arg Gly Gly Phe Met Arg Ser Phe Lys Arg Pro Leu Phe
                 85                  90                  95
Ser Val Thr Gln Ser Lys Gly Ser Thr Leu Leu His Ile Ser Cys Asp
            100                 105                 110
<210>1111
<211>363
<212>PRT
<213>Chlamydia trachomatis
<400>1111
Met Val Ser Met Ser Leu Asn Leu Pro Pro Ala Glu Val Arg Leu Arg
  1               5                  10                  15
Pro Val Thr Ala Lys Ser Phe Pro Asn Ser Ser Ala Trp Arg Ala Thr
            20                  25                  30
Gln Lys Arg Ile Thr Gly Cys Ser Leu Asn Ala Ser Ser Tyr Arg Pro
        35                  40                  45
Ser Ser Ala Arg Val Ile Ser Phe Val Val Gly Val Leu Val Val Leu
     50                  55                  60
Gly Trp Ile Cys Cys Arg Ile Ala Tyr Leu Ala Asn Ser Arg Val Leu
 65                  70                  75                  80
Thr Phe Pro Lys Met Phe Ala Ile Ala Ile Leu Pro Phe Ile Leu Phe
                 85                  90                  95
Gly Gly Gly Leu Ala Ile Leu Phe Arg Ile Ala Gly Lys Val Asp Val
            100                 105                 110
Leu Tyr Gly Lys Lys Ile Gln Pro Phe Ile Ser Arg Gln Trp Glu Arg
        115                 120                 125
Val Ile Leu Cys Glu Lys Glu Gly Glu Phe Ile Arg Pro Ile Gln Glu
    130                 135                 140
Pro Asp Met Tyr Met Asp Val Ser Leu Leu Asp Arg Thr Gly Ser Gly
145                 150                 155                 160
Ile Ala Pro Val Tyr Thr Tyr Pro Pro Met Asp Ala Arg Thr Val Ile
                165                 170                 175
Cys Val Val Thr Ser Ile Leu Leu Pro Ile Phe Ser Ile Val Arg Met
            180                 185                 190
Leu Tyr Asn Ile Phe Arg Phe Phe Ile Val Pro Phe Tyr Ile Leu Phe
        195                 200                 205
Gln Met Val Arg Gln Asn Tyr Gln Thr Asp Ile Pro Lys Glu Glu Arg
    210                 215                 220
Phe Val Cys Ser Asp Ile Val Arg Glu Met Thr Arg Ser Leu Leu Gln
225                 230                 235                 240
Ala Val Lys Ala Pro Phe Tyr Gly Ala Ala Cys Tyr Leu Ala Asn Leu
```

Sequence Listing

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                245                 250                 255
Tyr Gly Leu Leu Asn Pro Leu Ser Gly Arg Val Val Leu Ala Ser Leu
            260                 265                 270
Glu Arg Asp Trp Asn Asn Asp Val Ile Arg Ser Arg Gly Val Trp Gly
        275                 280                 285
Ile Phe Cys Glu Lys Asn Tyr Met Phe Glu Gly Gly Gly Thr Arg Ser
    290                 295                 300
Gly Leu Gly Gln Asn Ala Trp Tyr Leu Leu Gly Cys Phe Gln Pro Ala
305                 310                 315                 320
Gln Leu Phe Leu Leu Lys Asp Gly Val Ile Ile Ser Gly Ala Arg Pro
                325                 330                 335
Ser Ile Gln Ser Phe Pro Glu Ser Lys Glu Tyr Leu Ala Ser Phe Leu
            340                 345                 350
Tyr Gly Ala Val Pro Gly Arg Leu Ala Ser Phe
        355                 360
<210>1112
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<213>Chlamydia trachomatis
<400>1112
Leu Asn Leu Gln Glu Gly Phe Ala Gly Met Leu Tyr Ala Leu Pro Glu
  1               5                  10                  15
Ser Gln Val Leu Tyr Leu Lys Ala Thr Ala Leu Gln Gly His Lys Ala
            20                  25                  30
Leu Glu Phe Trp Ile Ala Cys Asp Asp Val Tyr Phe Arg Gly Met Leu
        35                  40                  45
Val Ser Val Asn His Thr Leu Tyr Gln Val Phe Met Val Tyr Lys Gly
    50                  55                  60
Arg Ser Pro Glu Ile Leu Asp Lys Glu Tyr Ser Thr Phe Ile Gln Ser
65                  70                  75                  80
Phe Lys Val Thr Lys Val Arg Asn Ser Lys Lys Met Asp Ile Arg Lys
                85                  90                  95
Arg Val Ser Leu
            100
<210>1113
<211>135
<212>PRT
<213>Chlamydia trachomatis
<400>1113
Val Ile Lys His Leu Arg Ser Tyr Cys Leu Tyr Leu Ala Trp Leu Phe
  1               5                  10                  15
Ser Cys Ile Gly Thr Leu Met Ser Val Tyr Tyr Ser Tyr Ile Leu Asn
            20                  25                  30
Val Glu Pro Cys Leu Leu Cys Tyr Tyr Gln Arg Ile Cys Leu Phe Pro
        35                  40                  45
Leu Val Val Ile Leu Gly Ile Ala Ala Tyr Arg Glu Asp Ile Ser Ile
    50                  55                  60
Lys Ile Tyr Thr Leu Pro Leu Ala Leu Val Gly Phe Gly Ile Ala Ile
65                  70                  75                  80
Tyr Gln Val Cys Leu Gln Glu Ile Pro Gly Met Thr Leu Asp Ile Cys
                85                  90                  95
Gly Lys Val Ser Cys Ser Thr Lys Leu Phe Leu Leu Gly Phe Ile Thr
            100                 105                 110
Met Pro Met Ala Ser Ala Ala Ala Phe Cys Ala Ile Ala Cys Leu Leu
        115                 120                 125
Val Leu Ala Thr Lys Ser Lys
    130                 135
<210>1114
<211>96
<212>PRT
<213>Chlamydia trachomatis
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<400>1114
Thr Arg Thr Arg Trp Glu Ser Ser Glu Ile Cys Cys Asn Arg Gly Met
1 5 10 15
Ala Ser Gln Ile Lys Val Thr Ser Ala Gln Ser Gly His Ile Ser Tyr
20 25 30
Gln Arg Asn Pro Lys Gln Phe Asp Gln Ala Ile Leu Asp Met Leu Arg
35 40 45
Leu Phe Cys Leu Gly Tyr Phe Pro Gln Leu Phe Glu Lys Gln Lys Asn
50 55 60
Leu Leu Glu Asp Leu Ile Tyr Asn Lys Leu Phe Val Glu Lys Thr Val
65 70 75 80
Val Met Gly Glu Gly Ala Cys Val Val Asn Leu Ala Ile Gly Gly Gly
85 90 95

<210>1115
<211>87
<212>PRT
<213>Chlamydia trachomatis
<400>1115
Val Met Thr Ile Ser Ser Thr Thr Thr Pro Ser Lys Ser Ser Ser Cys
1 5 10 15
Phe Gln Phe Arg Glu Thr Asn Lys Glu Pro Val Lys Thr Tyr Arg Val
20 25 30
Thr Ser Ile Ala Leu Val Ala Ile Gly Leu Leu Leu Leu Met Ile Ser
35 40 45
Ser Leu Leu Leu Leu Leu Arg Val Pro Met Thr Met Pro Cys Leu Val
50 55 60
Ile Ser Ser Ser Cys Met Ser Cys Gly Val Val Leu Val Gly Ser Lys
65 70 75 80
Ile Glu Gly Ile Cys Phe Gly
85

<210>1116
<211>104
<212>PRT
<213>Chlamydia trachomatis
<400>1116
Lys Met Val Lys Lys Lys Phe Cys Val Ile Gln Lys His Leu Phe Pro
1 5 10 15
Ser Tyr Ser Pro Lys Leu Val Asp Ile Val Lys Arg Tyr Lys Arg Glu
20 25 30
Ala Lys Ile Leu Ile Asn Lys Leu Ala Phe Gly Met Leu Trp Arg His
35 40 45
Arg Ala Lys Ser Gln Ile Leu Thr Glu Gly Ser Val Arg Leu Asp Leu
50 55 60
Gln Gly Phe Thr Glu Ser Lys Tyr Asn Tyr Gln Ile Gln Val Gly Ser
65 70 75 80
His Thr Ile Ala Ala Val Leu Ile Asp Met Glu Tyr Phe Gln Asp Ser
85 90 95
Ile Gln Ile Arg Thr Ser Leu Met
100

<210>1117
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>1117
Arg Ser Leu Gln Ser Ala Arg Leu Val Trp Met Arg Val Arg Ser Glu
1 5 10 15
Thr Asn Phe Cys Phe Cys Ala Arg Val Ser Ser Ala Glu Val Cys Thr
20 25 30
Ala Asp Ala Pro His Leu Gly Ser Arg Ile Asn Ala Cys Asn Phe Ser
35 40 45
Thr Ala Asp Cys Thr Pro Arg Lys Asp Cys Leu Gly Cys Lys Asp Ile

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     50                  55                  60
Ala Arg Leu Ser Ser Leu Arg Lys Val Phe Pro Ser Leu Ile Ala Leu
 65                  70                  75                  80
Cys Thr Pro Ser Thr Asn Gly Val Thr Pro Pro Ala Ala Leu Pro Ile
                85                  90                  95
Cys Lys Ile Val Ser Ile Lys Ser Arg
            100                 105
<210>1118
<211>111
<212>PRT
<213>Chlamydia trachomatis
<400>1118
Leu Phe Arg Leu Ser Val Phe Met Arg Lys Asn Gly Asp Trp Leu Asp
  1               5                  10                  15
Asn Gly Ala Gly Gly Arg Val Met Leu Tyr Val Asn Thr Lys Asn Ser
            20                  25                  30
Ala Gly Lys Thr Met Arg Arg Leu Leu Gly Ile Ala Val Cys Leu Gly
        35                  40                  45
Ser Thr Trp Tyr Thr Thr Val Pro Met Phe Trp Cys Ala Ala Thr Tyr
     50                  55                  60
Tyr Ala Thr Ser Ser Gly Phe Phe Gln Leu Ile Val Gly Glu Arg Asn
 65                  70                  75                  80
Phe Arg Phe Leu Leu Ser Leu Gly Val Trp Phe Gly Tyr Leu Leu Phe
                85                  90                  95
Leu Asn Gly Ala Leu Phe Tyr Leu His Arg Leu Ala Cys Phe Ser
            100                 105                 110
<210>1119
<211>106
<212>PRT
<213>Chlamydia trachomatis
<400>1119
Glu Ser Thr Asp Trp Arg Asn Ser Phe Val Lys Pro Ser Val Glu Ala
  1               5                  10                  15
Pro Ala Ala Gly Glu Ala Val Ile Glu Asn Leu Asn Phe Pro Ser Gly
            20                  25                  30
Val Trp Arg Ala Val Arg Ala Cys Xaa Phe Lys Gln His Cys Leu Tyr
        35                  40                  45
Phe Phe Pro Asp Pro Gln Gly Gln Gly Ser Phe Leu Leu Gly Phe Phe
     50                  55                  60
Asn Ile Asn Ser Phe Leu Ser Leu Leu Ile Arg Lys Ile Asn Tyr Lys
 65                  70                  75                  80
Glu Pro Ser Leu Gln Pro Gln Phe Leu Gln Gly Thr His Arg Phe Leu
                85                  90                  95
Val Ala Arg Gly Ala Arg Ala Arg Gly Tyr
            100                 105
<210>1120
<211>84
<212>PRT
<213>Chlamydia trachomatis
<400>1120
Gly Ile Trp Leu Ala Glu Lys Thr Phe Ala Arg Thr Gly Leu Trp Ile
  1               5                  10                  15
Arg Ser Ala Cys Ser Val Ala Leu Ser Gln Ser Ile Asp Thr Val Ile
            20                  25                  30
Phe Ser Phe Leu Gly Leu Tyr Gly Leu Val Ala Asn Leu Pro Asp Val
        35                  40                  45
Met Met Phe Ser Leu Leu Ser Lys Gly Thr Ala Leu Leu Leu Ala Ser
     50                  55                  60
Pro Cys Val Ala Leu Ala Lys Val Phe Tyr Asn Arg Leu Asn Lys Glu
 65                  70                  75                  80
Glu Ala His Phe
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<210>1121
<211>132
<212>PRT
<213>Chlamydia trachomatis
<400>1121

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Met Asn Ile Phe Val Leu Lys Gln Ile Val Leu Phe Gly Phe Glu Val
  1               5                  10                  15
Thr Ala Ala Asp Val Tyr Val Ile Gly Leu Phe Ser Cys Leu Asn Cys
             20                  25                  30
Ala Arg Glu Phe Trp Gly Lys Glu Ser Thr Lys Lys Val Ile Phe Val
         35                  40                  45
Ser Trp Cys Ser Thr Leu Ser Phe Leu Ile Leu Thr Gln Leu His Leu
     50                  55                  60
His Leu Lys Pro Ser Pro Gly Asp Ile Ser Gln Leu His Tyr Glu Ala
 65                  70                  75                  80
Leu Phe Ala Pro Ser Leu Arg Ile Ile Ser Ala Ser Val Ile Thr Thr
                 85                  90                  95
Met Ile Val Gln Phe Val Asp Phe Lys Val Phe Gly Trp Leu Lys Lys
            100                 105                 110
His Ser Arg Gly Arg Val Phe Gly Phe Val Pro His Ala Pro Leu Arg
        115                 120                 125
Phe Leu Lys Ala
    130
```

<210>1122
<211>125
<212>PRT
<213>Chlamydia trachomatis
<400>1122

```
Met Leu Arg Pro Pro Ser Phe Leu Lys Lys Leu Leu Ser Ser Val Arg
  1               5                  10                  15
Asn Asn Phe Ile Ile Lys Ser Ile Leu Lys Ala Pro Lys Val Leu Tyr
             20                  25                  30
His Asn Gly Ala Ser Lys Glu Ala Cys Val Leu Ser Tyr Tyr Gly Leu
         35                  40                  45
Phe Ser Cys Val Pro Ile Leu Val Phe Phe Leu Arg Leu Ser Gln Tyr
     50                  55                  60
Leu Phe Ile Ser Leu Asp Trp Lys Glu Trp Leu Leu Leu His Phe Pro
 65                  70                  75                  80
Asp Tyr Lys Ala Pro Ile Leu Ala Ile Ile Glu Ala Ala Tyr Ser Thr
                 85                  90                  95
Thr Ser Asn Ile Gly Val Val Leu Val Ser Ser Phe Phe Val Phe Cys
            100                 105                 110
Trp Ala Gly Ile Leu Met Leu Gln Ser Leu Glu Val Gly
        115                 120                 125
```

<210>1123
<211>85
<212>PRT
<213>Chlamydia trachomatis
<400>1123

```
Met Thr Thr Ala Thr Thr Ser Gln Thr Ala Leu Arg Ser Arg Lys Asp
  1               5                  10                  15
Val Pro Leu Ser Asp Cys Trp Asp Thr Lys Ser Leu Tyr Ala Ser Arg
             20                  25                  30
Glu Val Trp Gln Asp Glu Leu Lys Lys Val Gly Ala Glu Gly Ala Pro
         35                  40                  45
Phe Trp Pro His Leu Ser Glu Asn Asn Phe Asp Ile Lys Gln Pro Ser
     50                  55                  60
Ser Leu Arg Glu Leu Leu Thr Thr Val Phe Ser Ile Glu Arg Thr Leu
 65                  70                  75                  80
Asp Lys Leu Tyr Val
```

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85

<210>1124
<211>162
<212>PRT
<213>Chlamydia trachomatis
<400>1124

```
Met Ile Ser Met Ile Pro Arg Phe Ser Ile Ala Cys Ile Pro Leu Ala
  1               5                  10                  15
Val Trp Leu Phe Ser Gly Ala Lys Met Leu Val Lys Ser Leu Tyr Leu
             20                  25                  30
Ala Leu His Tyr Gln Phe Ser Leu Val Leu Ser Ala Glu Leu Phe Ala
         35                  40                  45
Ile Ala Trp Ile Leu Ala Ser Ile Lys His Arg Phe Ile Leu Arg Lys
     50                  55                  60
Ser Met Leu Lys Gln His Glu Leu Asp Ala Gln Leu Leu Ile Lys Glu
 65                  70                  75                  80
Ile Ser Pro Trp Thr Phe Ile Lys Arg Ser Phe Leu Ser Lys Arg Met
                 85                  90                  95
Phe Val Ile Ile Ser Met Ser Val Ile Ser Ser Leu Leu His Arg Ser
            100                 105                 110
Thr Thr Ile Pro Leu Leu Ser Phe Leu Met Cys Ser Ser Val Ser Tyr
        115                 120                 125
Ala Leu Phe Lys Thr Ser Leu Ala His Trp Lys Ser Leu Lys Glu Leu
    130                 135                 140
Lys Ser Lys Tyr Ser Val Tyr Tyr Tyr Leu Ile Thr Leu Gln Leu Pro
145                 150                 155                 160
Gln Pro
```

<210>1125
<211>75
<212>PRT
<213>Chlamydia trachomatis
<400>1125

```
Leu Gly Glu His Pro Pro Met His Arg Lys Leu Met His Gln Lys Thr
  1               5                  10                  15
Met Ala Ile Asp Gly Glu Leu Ala Trp Ile Gly Ser Ala Asn Phe Thr
             20                  25                  30
Leu Ala Ser Leu Glu Lys Ser Ala Asn Leu Ile Ile Gly Leu Lys Ser
         35                  40                  45
Ala Glu Ile Cys His Phe Ile Lys Thr Gln Thr Ser Gly Arg Cys Phe
     50                  55                  60
Ile Asn Asn Gln Leu Ile Glu Tyr Cys Phe Leu
 65                  70                  75
```

<210>1126
<211>147
<212>PRT
<213>Chlamydia trachomatis
<400>1126

```
Leu Val Ser Phe Leu Leu Phe Pro Arg Tyr Phe Pro Glu Trp Arg Pro
  1               5                  10                  15
Val Tyr Phe Ala Pro Leu Ile Val Thr Thr Phe Tyr Ser Gln Pro Lys
             20                  25                  30
Glu Arg Val Leu Leu Trp Ala Met Leu Ser Gly Leu Leu Cys Asp Met
         35                  40                  45
Gly Ser Thr Cys Phe Met Gly Ile Gln Ala Phe Leu Tyr Val Ser Thr
     50                  55                  60
Ser Leu Ile Leu Tyr Lys Thr Gln Arg Phe Phe Ile Lys Glu Arg Trp
 65                  70                  75                  80
Ile Ser Phe Pro Leu Ile Ser Ala Leu Phe Ser Leu Thr Phe Tyr Phe
                 85                  90                  95
Leu Ser Tyr Pro Val Leu Ala Phe Phe Asn Arg Pro Leu Cys Leu Tyr
```

```
            100                 105                 110
Asn Thr Ala Leu Leu Ala Asp Leu Gln His Val Leu Met Val Asp Leu
        115                 120                 125
Pro Tyr Gly Ala Leu Leu Ser Leu Leu Ala His Lys Lys Ser Phe Thr
    130                 135                 140
Pro Gln Ile
145
<210>1127
<211>130
<212>PRT
<213>Chlamydia trachomatis
<400>1127
Leu Cys Ser Ile Leu Ser Lys Leu Leu Arg Arg Met Gly Arg Arg Asn
  1               5                  10                  15
Gln Asn Gln Arg Glu Thr Ser Phe Arg Lys Ile Leu Ala Val Ala Ser
             20                  25                  30
Ser Ala Thr Pro Glu Ile Leu His Leu His Asp His Ala Ile Ala Thr
         35                  40                  45
Ser Gly Ser Gln Tyr Gln Arg Trp His Val Asp Asn Lys Thr Tyr Thr
     50                  55                  60
His Ile Leu Asp Pro Leu Thr Gly Thr Pro Leu Glu Asp Ser Ser His
 65                  70                  75                  80
Pro Ile Leu Ala Val Ser Val Ile Asn Glu Ser Cys Ala Phe Ala Asp
                 85                  90                  95
Ala Met Ala Thr Ala Leu Thr Thr Phe Ser Ser Lys Gln Glu Ala Leu
            100                 105                 110
Asp Trp Ala Asn Lys Lys His Leu Cys Ala Tyr Ile Thr Asp Lys Asn
        115                 120                 125
Val Ser
    130
<210>1128
<211>92
<212>PRT
<213>Chlamydia trachomatis
<400>1128
Ile Pro Ala Asn Thr Thr Gly Leu Ile Ser Leu Lys Pro Ser Lys Gly
  1               5                  10                  15
Ser Leu Ala Gly Cys Leu Thr Val Val Thr Val Ser Pro Ile Phe Thr
             20                  25                  30
Ser Phe Thr Phe Phe Arg Leu Ala Met Lys Tyr Pro Thr Cys Pro Ala
         35                  40                  45
Arg Lys Asp Pro Ser Met Arg Val Ala Ser Gly Lys Lys Ala Pro Ile
     50                  55                  60
Pro Lys Thr Ser Lys Glu Glu Pro Leu Val Ala Met Lys Val Met Arg
 65                  70                  75                  80
Ser Pro Phe Leu Ile Ser Pro Leu Ile Thr Arg Thr
                 85                  90
<210>1129
<211>151
<212>PRT
<213>Chlamydia trachomatis
<400>1129
Met Gln Asn Ile Leu Arg Thr Ser Ser Cys Arg Tyr Met Phe Leu Leu
  1               5                  10                  15
Gly Ile Arg Ser Val Trp Asn Arg Val Ala Val Val Asn Asn Phe Arg
             20                  25                  30
Gly Ser Ser Trp Lys Ile Val Ala Ile Pro Ser Cys Ile Leu Phe Thr
         35                  40                  45
Leu Ile Phe His Leu Pro Arg Trp Leu Ile Asp Phe Gly Val Cys Thr
     50                  55                  60
Asn Leu Ala Cys Ser Leu Ser Ile Ile Phe Trp Val Phe Ser Leu Arg
```

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```
 65                  70                  75                  80
Ser Ser Ala Ser Ala Arg Ile Phe Pro Ser Leu Leu Leu Tyr Leu Cys
                85                  90                  95
Leu Leu Arg Leu Gly Leu Asn Leu Ala Ser Thr Arg Trp Ile Leu Ser
            100                 105                 110
Ser Gly Trp Ala Ser Pro Leu Ile Phe Ala Leu Gly Asn Phe Phe Ser
        115                 120                 125
Leu Gly Ser Ile Pro Val Gly Ser Tyr Gly Met Phe Thr Pro Val Phe
    130                 135                 140
Ser Glu Phe Ser Arg His Asn
145                 150
<210>1130
<211>165
<212>PRT
<213>Chlamydia trachomatis
<400>1130
Leu Ala Leu Arg Gly Phe Pro Val Ser Ile Ile Glu Gln Asp Tyr Leu
  1                 5                  10                  15
Arg Met Lys Ser Glu Arg Leu Lys Lys Leu Glu Ser Glu Leu His Asp
            20                  25                  30
Leu Thr Gln Trp Met Gln Leu Gly Leu Val Pro Lys Lys Glu Ile Glu
        35                  40                  45
Arg His Gln Glu Glu Ile Arg Leu Leu Glu Ser Lys Ile Leu Glu Glu
    50                  55                  60
Lys Glu Arg Leu Gln Leu Leu Lys Glu Ser Gly Glu Ile Lys Glu Tyr
 65                  70                  75                  80
Val Thr Pro Arg Arg Thr Pro Ala Lys Thr Ile Tyr Pro Asp Gly Pro
                85                  90                  95
Ser Val Ser Asp Val Glu Phe Val Glu Ser Ser Asp Thr Glu Val Asp
            100                 105                 110
Leu Asp Ala Gly Asp Thr Ile Glu Ile Asp Leu Gly Asp Glu Ala Arg
        115                 120                 125
Glu Glu Ser Gly Asn Glu Leu Asp Tyr Ser Ser Glu Asp Asp Glu Asp
    130                 135                 140
Pro Phe Ser Asp Arg Asn Arg Trp Arg Arg Gly Gly Ile Ile Asp Pro
145                 150                 155                 160
Asp Ala Asn Glu Trp
                165
<210>1131
<211>78
<212>PRT
<213>Chlamydia trachomatis
<400>1131
Met Glu Glu Leu Pro Pro Asn Glu Arg Ile Lys Glu Thr Leu Ala Leu
  1                 5                  10                  15
Arg Leu Arg Leu Cys Asp Pro Ile Pro Phe Gly Val Phe Pro Gln Glu
            20                  25                  30
Leu Val Asp Glu Ile Leu Met His Pro Ser Ile Gly Ser Leu Phe Thr
        35                  40                  45
Lys Asp Asp Lys Ala Phe Ser Leu Asn Lys Lys Gly Arg Leu Phe His
    50                  55                  60
Asp Ser Ile Ala Glu Glu Ile Met Ala Ser Ser Phe Ser Phe
 65                  70                  75
<210>1132
<211>174
<212>PRT
<213>Chlamydia trachomatis
<400>1132
Val Val Asp Ala Tyr Arg Ile Cys Ile Leu Leu Val Trp Leu Ala Gly
  1                 5                  10                  15
Ala Leu Leu Val Pro Asp Asp Asp Val Gly Phe Ser Ser Cys Glu Ser
```

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```
            20                  25                  30
Pro Pro Asp Pro Glu Leu Pro Pro Glu Leu Leu Leu Phe Gly Leu Thr
        35                  40                  45
Tyr Phe Ser Phe Asn Thr Asp Pro Val Ala Cys Thr Gly Ile Cys Ser
    50                  55                  60
Val Gln Asp Cys Pro Glu Ala Ser Glu Asn Phe Leu Val Ile Gly Ser
65                  70                  75                  80
Gly Val Val Gly Val Val Gly Val Gly Asp Gly Val Ala Asp Arg Leu
                85                  90                  95
Tyr Phe Leu Glu Lys Val Phe Val Ile Asp Ala Val Val Gly Pro Leu
            100                 105                 110
Val Ala Gly Asp Asp Val Ala Ser Glu Val Val Phe Phe Gly Glu Asp
        115                 120                 125
Asp Gly Asp Leu Gly Val Val Ser Val Phe Gly Gly Val Thr Val Ser
    130                 135                 140
Ser Arg Glu Ile Gly Ser Val Asp Val Gly Val Val Leu Phe Gly Trp
145                 150                 155                 160
Phe Gln Val Pro Cys Met Glu Lys Val Arg Ile Pro Val Phe
                165                 170
<210>1133
<211>108
<212>PRT
<213>Chlamydia trachomatis
<400>1133
Tyr His Ala Thr Asn Ala Ser Arg Gly Trp Arg Arg Asn Ser Thr Ser
  1               5                  10                  15
Ser Ser Arg Asn Pro Cys Ile Lys Val Leu Leu Ser Tyr Asn Lys Arg
            20                  25                  30
Lys Arg Val Phe Phe Leu Leu Cys Leu Ser Pro Pro Pro Leu Leu Phe
        35                  40                  45
Ile Ser Ser Val Arg Phe Leu Leu Asn Leu Leu Val Leu Val Phe Met
    50                  55                  60
Glu Ser Leu Ser Val Arg Ser Thr Ile Pro Leu Pro Leu Gly Ala Lys
65                  70                  75                  80
Lys Leu Ser Ala Asp Arg Tyr Arg Phe Ser Leu Phe Ser Ser Gln Ala
                85                  90                  95
Gln Gln Val Thr Leu Val Leu Leu Asp Pro Pro Phe
            100                 105
<210>1134
<211>114
<212>PRT
<213>Chlamydia trachomatis
<400>1134
Met Ala Ser Lys Lys Gln Thr Ser Trp Phe Arg Tyr Met Glu Glu Cys
  1               5                  10                  15
Val Ile Arg Ser Trp Trp Leu Ile Leu Cys Leu Leu Gly Gly Gly Phe
            20                  25                  30
Val Tyr Asp Arg Ala Ile Ser Gln Leu Cys Thr Gln Glu Leu Arg Leu
        35                  40                  45
Gln Gln Arg Met Phe His Leu Lys Ser His Leu Lys Glu Ala Leu Glu
    50                  55                  60
Lys Gln Gln Glu Leu Ser Thr His Leu Ala Ser Trp Asp Asp Pro Lys
65                  70                  75                  80
Val Ile Glu Leu Ala Leu Ile His Lys Leu Gly Leu Val Pro Lys Gly
                85                  90                  95
Tyr Glu Lys Ile Cys Phe Gln Asn Ser Gln Lys Thr Lys Arg Asn His
            100                 105                 110
Arg Lys

<210>1135
<211>240
```

<212>PRT
<213>Chlamydia trachomatis
<400>1135

```
Leu Val Ala Glu Lys Ile Thr Thr Lys Ala Phe Val Ile Phe Ser Val
  1               5                  10                  15
Leu Phe Ser Leu Ile Ile Gly Phe Ile Ala Ser Cys Gly Phe Leu Phe
             20                  25                  30
Ala Gly Pro Pro Ala Phe Ile Ala Ser Gly Leu Cys Phe Ala Leu Leu
         35                  40                  45
Val Ser Val Val Ser Phe Phe Gly Cys Gln Lys Leu Ile Pro Tyr Gly
     50                  55                  60
Ile Gln His Leu Met Ser Tyr Val Lys Ser Ile Pro Ser Leu Ser Ser
 65                  70                  75                  80
Ser Leu Ile Asp Phe Leu Lys Thr Glu Ser Lys Ser Ile Ser Ser Leu
                 85                  90                  95
Tyr Pro Asn Pro Gly Leu Lys Glu Cys Phe Lys Gly Ala Ser Pro Lys
            100                 105                 110
Tyr Lys Lys Phe Phe Phe Asp His Pro Glu Lys Leu Leu Ser Ala Ala
        115                 120                 125
Phe Thr Asp Trp Thr Pro Gln Ile Ile Pro Ser Asp Ser Gly Gln Pro
    130                 135                 140
Arg Thr Ile Ile Leu Ser His Ser Ser Leu Pro Phe Ser Leu Thr Leu
145                 150                 155                 160
Ser Thr Leu Asp Phe Glu Thr Leu His Thr Tyr Xaa Ile Lys Ser Asn
                165                 170                 175
Ala Leu Thr Cys Arg Val Gly Tyr Ala His Gln Leu Pro Ser Gly Asn
            180                 185                 190
Pro Val Met Arg Glu Xaa Lys Lys Glu Phe Tyr Asn Asn Ile Met Ile
        195                 200                 205
Gln Glu Met Lys Pro Ser Ser Phe Leu Phe Arg Lys Ala Ser Ser Cys
    210                 215                 220
Asn Lys Lys Ser Ser Leu Lys Asn Ser Leu Val Thr Met His Arg Ser
225                 230                 235                 240
```

<210>1136
<211>81
<212>PRT
<213>Chlamydia trachomatis
<400>1136

```
Leu Leu His Lys Gly Asp Thr Cys Ala His Arg Xaa Pro Thr Lys Arg
  1               5                  10                  15
Ala Ala Xaa Ser Pro Pro Val Pro Ala Arg Asn Ser Ile Ile Thr Leu
             20                  25                  30
Arg Ser Ser Ser Gly Ser Gly Gly Ile Ser Arg Phe Ser Asn Cys Phe
         35                  40                  45
Asp Arg Arg Ser Thr Ala Ser Ser Pro Thr Arg Thr Pro Ser Ser Ser
     50                  55                  60
Ile Ala Thr Ile Ser Gly Ser Phe Ser Val Asp Xaa Ala Ser Leu Ser
 65                  70                  75                  80
Ser
```

<210>1137
<211>138
<212>PRT
<213>Chlamydia trachomatis
<400>1137

```
Leu Ala Phe Phe Ile Ser Tyr Pro Ser Ala Glu Ala His Ser Pro Leu
  1               5                  10                  15
Gln Ser Ser Ile Gln Glu Lys Ile Leu Thr Ala Arg Pro Gly Asp Tyr
             20                  25                  30
Ala Val Leu Ser Arg Gly Ser Gln Lys Phe Phe Phe Leu Ile Arg Gln
         35                  40                  45
```

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Ser Ser Ser Glu Ala Thr Trp Val Glu Val Ser Glu Phe Ala Ser Leu
50 55 60
Thr Gln Gln Glu Lys Lys Leu Val Glu Gln Ser Ser Trp Lys Asn Ala
65 70 75 80
Phe His Gln Leu Gln Ser Ser Lys Lys Val Tyr Leu Leu Arg Ile Ser
85 90 95
Lys Asn Pro Leu Met Ile Phe Val Leu Lys Asn Ala Gln Trp Met Pro
100 105 110
Leu Ser Glu Lys Asp Pro Leu Pro Phe Phe Val Lys Ile Leu Arg Thr
115 120 125
Pro Phe Ile Ser Ser Pro Leu Ser Leu Asn
130 135

<210>1138
<211>171
<212>PRT
<213>Chlamydia trachomatis
<400>1138
Leu Glu Arg Arg Met Gly Phe Ser Arg Gly Ile Gly Tyr Glu Lys Cys
1 5 10 15
Gln Glu Lys Asn Lys Asn Phe Lys Lys Val Leu Glu Gly Ala Phe Phe
20 25 30
Leu Ala Phe Phe Ile Lys Met Phe Gly Tyr Gly Ser Pro Phe Cys Tyr
35 40 45
Val Arg Phe Ser His Thr Lys Ile Val Ile Leu Gly Leu Ser Asn Gly
50 55 60
Lys Lys Thr Leu Ile Pro Glu Tyr Arg Gln Val Leu Phe Val Asp Ser
65 70 75 80
Ser Thr Gly Tyr Lys Phe Val Cys Gly Ser Thr Tyr Gln Thr Asp Lys
85 90 95
Thr Glu Val Phe Glu Gly Gln Glu Tyr Pro Val Cys Tyr Val Ser Ile
100 105 110
Ser Ser Ser Ser His Pro Phe Phe Thr Gly Ser Lys Lys Leu Val Asp
115 120 125
Ala Glu Gly Arg Val Asp Lys Phe Leu Lys Arg Tyr Ser Gly Ile Lys
130 135 140
Gln Ser Ala Pro Lys Pro Glu Thr Val Val Glu Asp Val Leu Pro Lys
145 150 155 160
Gly Lys Lys Lys Ser Pro Ala Lys Lys Lys Lys
165 170

<210>1139
<211>85
<212>PRT
<213>Chlamydia trachomatis
<400>1139
Met Leu Arg Ser Leu Ile Ala Met His Phe Ser Ile Lys Gly Thr Cys
1 5 10 15
Ser Leu Trp Ile Leu Gln Phe Leu Leu Ile Ala Ile Leu Pro Tyr Arg
20 25 30
Asn Ser Leu Cys Leu Lys Arg Lys Lys Asn Phe Asn His Leu Lys Thr
35 40 45
Asn Leu Thr Ser His Leu Leu Thr Glu Val Leu Leu Gln Asn Leu Gln
50 55 60
Arg Asn Leu Phe Pro Leu Leu Leu Ile Ser Val Leu Lys Phe Arg Lys
65 70 75 80
Ala Thr Cys Leu Ser
85

<210>1140
<211>94
<212>PRT
<213>Chlamydia trachomatis
<400>1140

```
Thr Gly Thr Ala Cys Phe Lys Thr Leu Arg Ser Thr Ser Ile Met Arg
 1               5                  10                  15
Leu Pro Ser Arg Ser Ile Thr Ala Arg Ala Ser Lys Lys Phe Ser Leu
            20                  25                  30
Gln Ser Ser Cys Ser Pro Ser Arg Asn Pro Leu Gly Thr Pro Ile Asn
        35                  40                  45
Leu Gly Thr Ser Asn Asp Lys Ala Cys Glu Asn Val Pro Leu Lys Lys
    50                  55                  60
Ser Leu Val Val Glu Ser Leu Gly Ser Arg Pro Ala Lys Ala Ser Ile
65                  70                  75                  80
Ala Arg Ala Thr Ser Ser Thr Thr Val Val Asn Gly Pro Ile
                85                  90
```

<210>1141
<211>80
<212>PRT
<213>Chlamydia trachomatis
<400>1141

```
Met Arg Pro Asp His Met Asn Phe Cys Cys Leu Cys Ala Ala Ile Leu
 1               5                  10                  15
Ser Ser Thr Ala Val Leu Phe Gly Gln Asp Pro Leu Gly Glu Thr Ala
            20                  25                  30
Leu Leu Thr Lys Asn Pro Asn His Val Val Cys Thr Phe Phe Glu Asp
        35                  40                  45
Cys Thr Met Glu Ser Leu Phe Pro Ala Leu Cys Ala His Ala Ser Gln
    50                  55                  60
Asp Asp Pro Phe Val Cys Thr Trp Lys Phe Leu Leu Leu Val Arg Ile
65                  70                  75                  80
```

<210>1142
<211>102
<212>PRT
<213>Chlamydia trachomatis
<400>1142

```
Ala Asn Ser Pro Met Leu Ser Pro Thr Asn Ser Thr Ser Lys Thr Ala
 1               5                  10                  15
Pro Val Pro Pro Arg Asp Ser Ser Lys Pro Val Leu Ile Ser Glu Glu
            20                  25                  30
Pro Arg Asn Gln Leu Leu Gln Lys Val Ala Arg Thr Ala Leu Ala Val
        35                  40                  45
Leu Leu Val Val Val Thr Leu Gly Leu Ile Leu Leu Phe Tyr Ser Phe
    50                  55                  60
Ser Asp Leu Gln Ser Phe Pro Trp Cys Cys Gln Thr His Pro Ser Thr
65                  70                  75                  80
Lys Glu Gln Pro Thr Ile Ser Ile Pro Val Pro Leu Pro Ser Pro Pro
                85                  90                  95
Leu Ala Val Pro Arg Pro
            100
```

<210>1143
<211>172
<212>PRT
<213>Chlamydia trachomatis
<400>1143

```
Met Arg His Leu Ala Tyr Leu Leu Asp Lys Ile Ala Arg Ser Tyr Pro
 1               5                  10                  15
His Met Cys Pro Xaa Pro Asp Asn Met Glu Ala Tyr Xaa Glu Xaa Xaa
            20                  25                  30
Ile Pro Asn Lys Asp Ile Pro Leu Asp Thr Tyr Gln Lys Ile Phe Lys
        35                  40                  45
Leu Ser Ser Glu Asp Leu Glu Gln Val Tyr Lys Glu Gly Tyr Asn Ala
    50                  55                  60
Tyr Leu Gln Gly Asp Tyr Glu Glu Ser Ser Thr Ala Phe Tyr Trp Leu
65                  70                  75                  80
```

Substitute Sequence Listing

Ile Phe Phe Asn Pro Phe Val Ser Lys Phe Trp Phe Ser Phe Arg Ser
85 90 95
Ser Leu His Met Arg Gln Lys Tyr Gln Gln Ala Leu His Ala Tyr Gly
100 105 110
Val Ala Ala Leu Leu Arg Glu Lys Asp Pro Tyr Pro His Tyr Tyr Ala
115 120 125
Tyr Ile Cys Tyr Thr Leu Leu Asn Asn Pro Glu Glu Ala Glu Lys Ala
130 135 140
Leu Asp Leu Ala Trp Gln Lys Val Lys Thr Ser Ser Ala Tyr Ser Ser
145 150 155 160
Leu Lys Glu Glu Ile Leu Ala Ile Lys Ser Tyr Ala
165 170

<210>1144
<211>91
<212>PRT
<213>Chlamydia trachomatis
<400>1144
Gly Leu Leu Pro Thr Thr Cys Cys Phe Ser Asn Asp Ile Glu Lys Ser
1 5 10 15
Phe Ser Thr Tyr Phe Pro Asn Asp Arg Gly Asp Thr Ser Glu Asn Thr
20 25 30
Gln Gly Ser Cys Ser Asn Ala Lys Pro Phe Cys Asn Ser Ser Leu Phe
35 40 45
Cys Lys Gly Val Arg Asp Phe Leu Arg Phe Leu His Glu Val Cys Ser
50 55 60
Gly Arg Ser Ala Phe Lys Lys Ile Leu Phe Thr Ala Val Glu His Gln
65 70 75 80
Phe His Asp Phe Arg Ala Asp Thr Gln Asn Ile
85 90

<210>1145
<211>198
<212>PRT
<213>Chlamydia trachomatis
<400>1145
Met Lys Lys Phe Ile Ser Tyr Leu Leu Ile Ile Leu Pro Leu Ile Gly
1 5 10 15
Leu Trp Glu Phe Cys Ala Gln Asn Tyr Pro Ser Phe Gly Phe Ile Cys
20 25 30
Pro Pro Pro Ser Lys Val Leu Thr Thr Gly Ile His Ser Phe Pro Val
35 40 45
Leu Phe Gln His Ser Cys Tyr Thr Ala Gln Gly Ile Leu Gly Gly Phe
50 55 60
Phe Leu Ala Leu Leu Leu Ala Ile Leu Phe Ser Ala Thr Met Leu Leu
65 70 75 80
Phe Pro Ser Thr Gln Gly Leu Leu His Pro Leu Cys Val Leu Val Gln
85 90 95
Cys Leu Pro Met Phe Thr Leu Ala Pro Leu Ile Val Leu Trp Phe Gly
100 105 110
Trp Gly Thr Arg Ala Val Ile Ile Pro Thr Ala Leu Ser Ile Phe Phe
115 120 125
Pro Leu Ala Leu Thr Ile His Gln Gly Ile Lys Asn Ser Pro Glu Glu
130 135 140
Leu Leu Glu Gln Phe Thr Leu Tyr Gln Ala Thr Thr Trp Gln Lys Leu
145 150 155 160
Phe Lys Leu Arg Ile Pro Asn Gly Leu Pro His Ile Phe Ser Gly Leu
165 170 175
Lys Ile Ala Met Ser Ala Ala Asp Leu Arg Pro Leu Leu Glu Asn Gly
180 185 190
Leu Gln His Asn Leu Val
195

<210>1146

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<211>140
<212>PRT
<213>Chlamydia trachomatis
<400>1146

```
Val Thr Ile Ser Gly Ile Pro Gln Leu Gln Arg Thr Glu Arg Ser Leu
  1               5                  10                  15
Leu Ser Ile Tyr Asn His Gln Pro Leu Tyr Lys Arg Leu Met Asp Trp
             20                  25                  30
Ser Phe Phe Leu Leu Ser Gln Ser Cys Ile Leu Phe Leu Ala Ala Asp
         35                  40                  45
Ser Thr Thr Asn Val Glu Val Leu Asn Thr Ile Leu Gly Asn Leu Ser
     50                  55                  60
Lys Arg Ser Lys Ala Leu His Leu Leu Arg Glu Ser Leu Phe Ala Leu
 65                  70                  75                  80
Leu Gly Ser Phe Val Leu Tyr Pro Leu Leu Ser Gly Leu Leu Tyr Ser
                 85                  90                  95
Leu Gln Thr Pro Ala Cys Ala Val Leu Leu Ser Glu Gly Val Gly Leu
            100                 105                 110
Cys Ser Gln Glu Cys Gly Leu Phe Phe Gly Ile Leu Lys His Pro Phe
        115                 120                 125
Gly Val Lys Phe Leu Arg Tyr Pro Ser His Leu Lys
    130                 135                 140
```

<210>1147
<211>108
<212>PRT
<213>Chlamydia trachomatis
<400>1147

```
Leu Ala Cys Ser Glu Ile Trp Ala Ile Asn Tyr Ser Ala Ser Lys Asp
  1               5                  10                  15
Pro Ile Phe Ala Tyr Leu Ile Leu Leu Tyr Ala His Leu Ala Thr Ile
             20                  25                  30
Met Tyr Arg Ser Cys Asp Pro Val Cys Pro Ser Leu Leu Thr Phe Ser
         35                  40                  45
Ser Ala Pro Gln Asn Tyr Leu Gly Ile Ser Ser Pro Leu Gly Thr Ile
     50                  55                  60
Asn Ile Phe Phe Val Val Leu Lys Ala Gly Met Val Leu Ala Asn Asn
 65                  70                  75                  80
Ser Val Leu Pro Ala Leu Gln Val Met Phe Ile Pro Ala Gly Phe Met
                 85                  90                  95
Leu Leu Ile Thr Leu Tyr Ala Tyr Arg Lys Leu Ala
            100                 105
```

<210>1148
<211>182
<212>PRT
<213>Chlamydia trachomatis
<400>1148

```
Ser Leu Thr Glu Ser Leu Lys Lys Thr Thr Ser His Pro Ser Pro Arg
  1               5                  10                  15
Arg Gly Ile Ser Pro Ser Gly Leu Asn Asn Leu Ser His Ser Arg His
             20                  25                  30
Asn Leu Asn Ala Ser Ala Leu Asp Cys Tyr Met Val Pro Ile Asn Glu
         35                  40                  45
Asp Tyr Tyr Gln Val Leu Arg Leu Lys Leu His Ser Phe Phe His Lys
     50                  55                  60
Lys Lys Cys Val Asp Leu Leu Asn Leu His Thr Lys His Phe Phe Ile
 65                  70                  75                  80
Ser Lys Lys Leu Ser Ile Ala Pro Gly Lys Gln Val Arg Ser Phe Ile
                 85                  90                  95
Lys Ile Met Thr His Ile Tyr Ser Gly Pro Ser Phe His Phe Gly Ala
            100                 105                 110
Leu Arg Lys Glu Glu Arg Leu Ser Leu Arg Ile Thr Gly Arg Ile Ala
```

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Sequence Listing

```
        115                 120                 125
Leu Tyr Ser Phe Leu Gly Val Ile Met Ser Val Met Ala Ser Asp Lys
    130                 135                 140
Ala Cys Ala Pro Val Arg Ala Ser Arg Pro Phe Pro Lys Gln Lys Leu
145                 150                 155                 160
Arg Gly Ala Arg Phe Thr Gly Ala Ile Arg Ser Gly Asn Arg Ser Arg
                165                 170                 175
Arg Arg Gly Phe Ser Arg
            180
<210>1149
<211>133
<212>PRT
<213>Chlamydia trachomatis
<400>1149
Leu Gln Gln Pro Pro Thr Leu Trp Ser Gln Thr Cys Arg Tyr Ser Pro
  1               5                  10                  15
Met Arg Met Ala Leu Asp Lys Lys Lys Arg Leu Thr Leu Phe Val Glu
            20                  25                  30
Lys Arg Met Phe Arg Ser Gln Lys Pro Lys Lys Asn Lys Cys Cys Leu
        35                  40                  45
Trp Leu Arg Gly Val Leu Phe Gly Gly Phe Leu Ala Thr Leu Leu Thr
    50                  55                  60
Ser Leu Phe Leu Pro Lys Ser Gly Met Gln Ile Arg Lys Lys Leu Leu
65                  70                  75                  80
Arg Val Lys Thr Ser Gly Thr Lys Lys Gly Arg Ala Leu Leu Lys Asn
                85                  90                  95
Ser Lys His His Thr Arg Glu Phe Ala Glu Gln Thr Lys Leu Leu Ala
            100                 105                 110
Lys Asn Ile Ser Lys Glu Ile Gln Asp Phe Thr Gln Ser Ile Ile Asp
        115                 120                 125
Glu Ser Arg Arg Asp
    130
<210>1150
<211>145
<212>PRT
<213>Chlamydia trachomatis
<400>1150
Leu Arg Lys Asp Asp Asn Val Lys Phe Tyr Leu His Arg Leu Lys Phe
  1               5                  10                  15
Pro Gly Asp Arg Glu Asp Ile His Ala Ser Ile Pro Pro Gln Val Phe
            20                  25                  30
Cys Asp Ser Glu Glu Glu Gly Met Cys Ser Pro Val Glu Ile Arg Gly
        35                  40                  45
Ser Leu Glu Met Val Ser Gly Glu Gln Trp Phe Leu Ser Leu Glu Ile
    50                  55                  60
Ser Thr Ile Leu Ser Leu Arg Cys Arg Ile Cys Asp Ala Pro Val Glu
65                  70                  75                  80
Trp Pro Val Gln Gly Ile Val Ile Gln Gln Leu Ile His Cys Ser Asp
                85                  90                  95
Glu Arg Ser Gly Val Phe Asp Cys Arg Asp Leu Ile Arg Asp Glu Leu
            100                 105                 110
Leu Leu Glu Gly Asp Arg Phe Gln Glu Cys Gln Glu Gly Gly Cys Pro
        115                 120                 125
Ala Arg Glu Phe Ile Lys Asn Phe Leu Lys Lys Arg Arg Asp Val Thr
    130                 135                 140
Leu
145
<210>1151
<211>90
<212>PRT
<213>Chlamydia trachomatis
```

<400>1151
Val Leu Met His Phe Ser Asn Cys Leu Tyr Gln Ala Phe Glu Asp Gln
1 5 10 15
Leu Leu Pro Glu Pro Leu Tyr Gln Lys Phe Gln Ile Cys Tyr Gln Thr
20 25 30
Tyr Ile Glu Ala Ala Ser Lys Lys Ser Pro Leu Arg Lys Arg Lys Leu
35 40 45
Phe Val Leu Asn Gly Leu Arg Ser Leu Leu Met Thr Leu Arg Ile Leu
50 55 60
Leu Phe Ser Leu Pro Thr Thr Lys Lys Phe Ala Arg Gln Leu Ile Phe
65 70 75 80
Thr Asn Leu Ala Ser Thr Phe Phe Leu Arg
85 90

<210>1152
<211>180
<212>PRT
<213>Chlamydia trachomatis
<400>1152
Met Leu Leu Leu Glu Gln Asn Glu Asp Pro His Gln Tyr Lys Asp Ser
1 5 10 15
Val Ala Thr Ser Met Leu Leu Ser Trp Ile His Asn Leu Tyr Phe Ser
20 25 30
Asp Leu Arg Thr Glu Gln Gln Leu Gly Tyr Met Val Gly Ser Lys Tyr
35 40 45
Leu Glu Phe Ala Glu Thr Pro Cys Gly Leu Phe Tyr Ile Arg Ser Asn
50 55 60
Asn Tyr Ser Pro Glu Glu Leu Val His Arg Thr Gln Leu Phe Ile Gln
65 70 75 80
Lys Ile Ala Thr Asp Pro Glu Ser Ala Gly Leu Ser Glu Glu Ile Phe
85 90 95
Glu Gln Leu Arg Glu Thr Tyr Ile Gln Ser Ile Leu Leu Pro Ser Ser
100 105 110
Thr Pro Leu Ala Met Ala Lys Lys Leu Phe Ser Ile Ala Phe Glu Thr
115 120 125
Lys Lys Gln Asp Phe Ser Arg Pro Asp Gln Lys Ile Ala Ala Ala Arg
130 135 140
Ser Met Asp Tyr Ser Tyr Phe Lys Lys Tyr Cys Glu Glu Phe Leu Ser
145 150 155 160
Gln Lys Phe Gly Pro Glu Ile Gln Leu Leu Val Tyr Gly Ala Asn Ser
165 170 175
Ser Gln Glu Lys
180

<210>1153
<211>87
<212>PRT
<213>Chlamydia trachomatis
<400>1153
Met Ile Leu Pro His Tyr Ser Ser Gly Leu Arg Ile Gly Ser Ala Ile
1 5 10 15
Leu Phe Phe Ser Ala Val Ile His Thr Phe Leu Thr Pro Trp Leu Thr
20 25 30
Arg Leu Tyr Glu Glu Ser Gln His Lys Lys Met Ile Phe Pro Glu Arg
35 40 45
Trp Arg Gln Tyr Leu Trp Leu Ser Glu Leu Leu Arg Ile Val Ser Arg
50 55 60
Val Glu Leu Val Phe Val Leu Trp Ala Ile Pro Leu Phe Cys Leu Phe
65 70 75 80
Leu Tyr Thr Glu Ala Ile Ala
85

<210>1154
<211>75

<212>PRT
<213>Chlamydia trachomatis
<400>1154
Met Glu Leu Val Val Gln Ser Arg Glu Thr Asp Lys Lys Ser Val Ile
1 5 10 15
Lys Lys Ile Arg Gln Gln Gly Gly Ile Pro Ala Val Leu Tyr Ser Gly
20 25 30
Gly Lys Ser Leu Ala Asn Ile Val Val Asp Ala Arg Val Phe Ser Lys
35 40 45
Phe Leu Ser Thr Leu Glu Ser Gly Ala Phe Ser Phe Tyr Cys Val His
50 55 60
Ala Phe Leu Met Lys Asp Glu Lys Ser Lys Leu
65 70 75
<210>1155
<211>96
<212>PRT
<213>Chlamydia trachomatis
<400>1155
Leu Phe Phe Gln Lys Arg Lys Arg Thr His Tyr Phe Leu Met Asn Ser
1 5 10 15
Asn Ile Glu Tyr Arg Gln Tyr Arg Ile Asp Ile Leu Ser Cys Phe Ile
20 25 30
Cys Leu Leu Met Met Val Trp Thr Leu Val Ser Ile Lys Leu Gly Asp
35 40 45
Ser Leu Gly Gly Ile Ile Pro Gly Cys Leu Gly Tyr Leu Leu Ala Lys
50 55 60
Arg Lys His Arg Arg Pro Val Arg Trp Phe Phe Leu Thr Phe Phe Phe
65 70 75 80
Gly Ile Ala Ser Gly Ile Phe Leu Val Val Leu His Pro Lys Gln Lys
85 90 95
<210>1156
<211>242
<212>PRT
<213>Chlamydia trachomatis
<400>1156
Met Ser Leu Phe Thr Thr Cys Ala Pro Val Asp Thr Pro Cys Ile His
1 5 10 15
Leu Thr Val Phe Gln Glu Ile Phe Asn Arg Tyr Thr Glu Lys Pro Tyr
20 25 30
Pro Ala Thr Ser Ile Leu Val Pro Leu Tyr Phe Pro Glu Glu Pro Leu
35 40 45
Thr Phe Ser Glu Asp Leu Ser Pro Ser Thr Ala Pro Ile Leu Asn Pro
50 55 60
Pro Gly Leu Glu Pro Gln Ala Leu Pro Val Glu Thr Pro Lys Asp Pro
65 70 75 80
Val Thr Thr Ser Ile Pro Pro Pro Ser His Pro Lys Glu Ser Lys His
85 90 95
Ser Trp Ala Cys Val Pro Ile Tyr Pro Gly Leu Ser His Glu Glu Leu
100 105 110
Leu Lys Glu Asn Tyr Pro Ala Leu Lys Arg Tyr Ile Gln Arg Pro Ala
115 120 125
Arg Ala Ser Cys Gly Ile Phe Val His Glu Ser Gln Glu His Glu Ile
130 135 140
Leu Phe Phe Asn Arg Leu Ala Lys Ile Leu Ser Gln Lys Ile Phe Pro
145 150 155 160
Thr Arg Leu Val Leu Phe Tyr Gln Lys Thr Leu Ser Asp Phe Ser His
165 170 175
Ser Pro His Pro Phe Cys Leu Ala Pro Leu Pro Thr Ile Arg Tyr Lys
180 185 190
Asn Ser Gln Val Asn Tyr His Asp Pro Val Leu His Asp Lys Val Thr
195 200 205

```
Cys Ile Pro Ile Tyr Ser Ser Ser Gln Tyr Glu Lys Asp Ser Ala Leu
    210                 215                 220
Lys Arg Asp Leu Trp Thr Leu Leu Thr Ser Leu Ser Ala Ser Met Gln
225                 230                 235                 240
Lys Ser
```

<210>1157
<211>88
<212>PRT
<213>Chlamydia trachomatis
<400>1157

```
Met Asp Asn Gly Val Leu Asp Ile Arg Ser Leu Ser Ile Lys Val Phe
  1               5                  10                  15
Tyr Ala Gln Leu Ser Cys Ala Ser Gly Leu Phe Val Gln Ile Val Leu
            20                  25                  30
Val Phe Cys Ser Arg Ser Lys Thr Phe Ile Leu Ser Ala Ala Phe Leu
        35                  40                  45
Phe Ala Phe Ile Leu Val Ile Val Lys Asn Val Glu Lys Leu Leu Val
    50                  55                  60
Ala Ile Leu Ser Asp Arg Phe Phe Val Arg Lys Thr Arg Val Ile Val
65                  70                  75                  80
Leu Gln Asn Asn Met Ser Arg Thr
                85
```

<210>1158
<211>82
<212>PRT
<213>Chlamydia trachomatis
<400>1158

```
Met Met Lys Thr Lys His Glu Tyr Ser Phe Gly Val Ile Pro Ile Arg
  1               5                  10                  15
Phe Phe Gly Thr Pro Asp Arg Ser Thr Leu Lys Ala Cys Phe Ile Cys
            20                  25                  30
His Thr Asp Gly Lys His Trp Gly Phe Pro Lys Gly His Ala Glu Glu
        35                  40                  45
Lys Glu Gly Pro Gln Glu Ala Ala Glu Arg Glu Leu Val Glu Glu Thr
    50                  55                  60
Gly Leu Gly Ile Val Asn Phe Phe Pro Lys Ile Phe Val Glu Asn Leu
65                  70                  75                  80
Phe Leu
```

<210>1159
<211>94
<212>PRT
<213>Chlamydia trachomatis
<400>1159

```
Thr Asn Cys Cys Ile Cys Leu Phe Asn Ser Ile Met Ala Ala Ser Ser
  1               5                  10                  15
Ser Ser Arg Ala Phe Leu Ser Ser Ser Thr Ile Ala Leu Tyr Cys Lys
            20                  25                  30
Ala Arg Ser Lys Ser Arg Pro Asp Pro Pro Asn Asn Phe Leu Ser His
        35                  40                  45
Ser Asn Leu Ala Leu Ser Ser Leu Arg Arg Ser Ile Leu Cys Ser Arg
    50                  55                  60
Thr Cys Arg Ile Phe Asn Thr Phe Ser Ser Gly Gln Ala Ser Ile Cys
65                  70                  75                  80
Ser Ser Ser Arg Ala Arg Thr Leu Leu Cys Ala Ala Leu Ile
                85                  90
```

<210>1160
<211>217
<212>PRT
<213>Chlamydia trachomatis

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<400>1160
Val Pro Asn Arg His Val Asp Met Asn Ser Trp Trp Arg Ser Ala Cys
1 5 10 15
Tyr Pro Arg Ser Thr Phe Tyr Pro Leu Ser Asp Gly Asp Ser Thr Phe
20 25 30
His Arg Arg Ile Thr Lys Pro Asp Phe Arg Leu Cys Ser Thr Cys Trp
35 40 45
Ser Cys Ser Gln Pro Ile Leu Tyr Leu Tyr Ala Leu Leu Val Ile Ala
50 55 60
Asn His Asp Glu Ile Ser Phe Gly Leu Leu Arg Tyr Phe Leu Gly Gly
65 70 75 80
Tyr Arg Pro Ser Lys Thr Ala Arg Leu Ala Met Ser Ile Phe Gln Ile
85 90 95
His Gly Ile Met Leu Asp Ser Gln Leu Val Lys Thr Ser Ile Ser Thr
100 105 110
Leu Thr Pro Thr Leu Leu Lys Lys Ser Val Leu Ser Leu Leu Ala Ile
115 120 125
Leu His Ile Thr Asn Gln Lys Pro Ile Pro Lys Tyr Ser Lys Gly Ser
130 135 140
Arg Gly Leu Phe Val Leu Ser Arg Val Asn Ser Ile Phe Thr Ala Thr
145 150 155 160
Thr Ile Ser Pro Ser Leu Ser Leu Arg Gln Cys Pro Xaa Ser Leu His
165 170 175
His Ser Val Gln Val Gly Thr Tyr Pro Xaa Lys Glu Phe Arg Tyr Leu
180 185 190
Ser Thr Val Ile Val Thr Ala Ala Ile His Gln Gly Leu Gly Ser Met
195 200 205
Leu Arg Phe Thr Ala Asp Ile Ser Leu
210 215
<210>1161
<211>90
<212>PRT
<213>Chlamydia trachomatis
<400>1161
Glu Ala Phe Leu Gln Pro Ser Phe Glu Arg Lys Leu His Leu Met Leu
1 5 10 15
Pro Pro Ile Phe Tyr Ala Pro Ile Phe Tyr Gln Leu Pro Lys Lys Pro
20 25 30
Phe Phe Leu Thr Ser Gln Phe Ile Pro Ser His Thr Ile Leu Asn Pro
35 40 45
Phe Tyr Lys Thr Lys Phe Ser Ser Leu Phe Phe Phe Phe Leu Leu Ile
50 55 60
Leu Pro Phe Leu Ser Ser Ile Phe Leu Ser Lys Phe Phe Phe Leu Ala
65 70 75 80
Leu Arg Thr Ser Leu His Leu Gly Leu Phe
85 90
<210>1162
<211>198
<212>PRT
<213>Chlamydia trachomatis
<400>1162
Val Lys Gly Phe Ser Ser Lys Gly Gly Val Arg Leu Tyr Phe Tyr Leu
1 5 10 15
Gln Gly Leu Ala Phe Ala Arg Thr Glu Arg Ile Thr Lys Lys Arg Glu
20 25 30
Gly Ile Asn Glu Lys Gly Lys Glu Gly Pro Val Asp Lys Ser Ala Leu
35 40 45
Tyr Lys Lys Glu Lys Ala Leu Lys Tyr Tyr Phe Phe Val Glu Arg Val
50 55 60
Phe Phe Ala Val Leu Thr Phe Val Leu Gly Ala Ala Phe Phe Val Gly
65 70 75 80

```
Leu Thr Phe Ala Leu Val Ala Gln Val Leu Phe Val Gln Ala Phe Leu
                85                  90                  95
Ala Thr Val Phe Val Ala Arg Thr Gly Phe Leu Ala Ala Ala Leu Ala
            100                 105                 110
Phe Leu Ala Ala Ala Leu Leu Phe Phe Ile Lys Pro Ile Phe Ser Ala
        115                 120                 125
Leu Met Asp Ser Leu Arg Tyr Thr Phe Ala Val Phe Ser Asn Leu Ile
    130                 135                 140
Asp Ser Val Arg Thr Leu Cys Ala Ala Ala Leu Phe Pro Phe Ser Ala
145                 150                 155                 160
Leu Ser Lys Phe Cys Trp Ile Leu Ser Asn Lys Ser Val Ile Phe Phe
                165                 170                 175
Ala Val Ser Phe Ser Ala Met Lys Lys Tyr Pro Leu Val Val Val Leu
            180                 185                 190
Asn Tyr Phe Phe Gln Phe
        195
<210>1163
<211>82
<212>PRT
<213>Chlamydia trachomatis
<400>1163
Met Thr Trp Leu Ser Gly Leu Tyr Ser Ile Phe Val Ala Ser Ala Ala
  1                 5                  10                  15
Phe Cys Ser Leu Asp Leu Ile Leu Val Ala Val Ile Leu Leu Ser Arg
             20                  25                  30
Lys Phe Leu Ile Lys Val His Pro Cys Lys Leu Lys Ile Asn Asn Asp
         35                  40                  45
Asp Ser Leu Thr Lys Thr Val Asp Ser Gly Lys Thr Leu Leu Ser Ser
     50                  55                  60
Leu Leu Asp Phe Arg Asn Arg Tyr Pro Phe Ser Leu Trp Arg Glu Ser
 65                  70                  75                  80
Cys Leu

<210>1164
<211>191
<212>PRT
<213>Chlamydia trachomatis
<400>1164
Val Pro Asn Arg His Val Asp Met Asn Ser Trp Trp Arg Ser Ala Cys
  1                 5                  10                  15
Tyr Pro Arg Ser Thr Phe Tyr Pro Leu Ser Asp Gly Asp Ser Thr Phe
             20                  25                  30
His Arg Arg Ile Thr Lys Pro Asp Phe Arg Leu Cys Ser Thr Cys Trp
         35                  40                  45
Ser Cys Ser Gln Pro Ile Leu Tyr Leu Tyr Ala Leu Leu Val Ile Ala
     50                  55                  60
Asn His Asp Glu Ile Ser Phe Gly Leu Leu Arg Tyr Phe Leu Gly Gly
 65                  70                  75                  80
Tyr Arg Pro Ser Lys Thr Ala Arg Leu Ala Met Ser Ile Phe Gln Ile
                85                  90                  95
His Gly Ile Met Leu Asp Ser Gln Leu Val Lys Thr Ser Ile Ser Thr
            100                 105                 110
Leu Thr Pro Thr Leu Leu Lys Lys Ser Val Leu Ser Leu Leu Ala Ile
        115                 120                 125
Leu His Ile Thr Asn Gln Lys Pro Ile Pro Lys Tyr Ser Lys Gly Ser
    130                 135                 140
Arg Gly Leu Phe Val Leu Ser Arg Val Asn Ser Ile Phe Thr Ala Thr
145                 150                 155                 160
Thr Ile Ser Pro Ser Leu Ser Leu Arg Gln Cys Pro Gly Ser Leu His
                165                 170                 175
His Ser Cys Arg Ser Glu Leu Thr Arg Gln Gly Ile Ser Leu Pro
```

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Sequence Listing

```
            180                 185                 190
<210>1165
<211>103
<212>PRT
<213>Chlamydia trachomatis
<400>1165
Met Met Arg Met Leu Glu Ala Cys Lys Phe Asn Ala Ile Ser Phe Ser
  1               5                  10                  15
Lys Ala Leu Ile Phe Cys Thr Leu Thr Pro Val Leu Gly Arg Thr Ser
             20                  25                  30
Lys Ala Ala Arg Val Gly Pro Glu Gln Met Phe Pro Ile Ala Ala Ser
         35                  40                  45
Ile Pro Lys Leu Ala Asn Val Cys Cys Lys Ile Ala Ala Phe Phe Phe
     50                  55                  60
Asn Ser Ser Lys Arg Asp Ser Gly Arg Arg Thr Phe Arg Leu Leu Lys
 65                  70                  75                  80
Arg Trp Tyr Cys Gly Lys Ser Gly Ala Ser Pro Ala Ser Thr Asn Gly
                 85                  90                  95
Asp Gly Val Gly Lys Gly Leu
            100
<210>1166
<211>180
<212>PRT
<213>Chlamydia trachomatis
<400>1166
Arg Asn Ser Gly Ala Asp Met Leu Phe Trp Gly Ile Phe Ser Leu Cys
  1               5                  10                  15
Leu Gly Gly Leu Phe Gly Gly Tyr Cys Arg Leu Arg Tyr Thr Ala Lys
             20                  25                  30
Ala Leu Leu Leu Ser Trp Arg Gln Leu Leu Arg Leu Ala Leu Lys Lys
         35                  40                  45
Arg Glu Val Leu Gln Glu Ile Ala Ala Leu Gln Thr Phe Pro Leu Leu
     50                  55                  60
Arg Leu Glu Glu Glu Ile Ala Phe Leu Lys Gln Gly Ser Ser Tyr Ser
 65                  70                  75                  80
Leu Lys Glu Phe Leu Lys Ala Ser Asp Ala Asp Gly Val Thr Phe Tyr
                 85                  90                  95
Glu Met Glu Arg Phe Phe Thr Leu Arg Leu Lys Gln Thr Leu Ala Ser
            100                 105                 110
Leu Gln Xaa Ser Leu His Gln Glu Ala Val Gln His Leu Met Glu Glu
        115                 120                 125
Leu Leu Ala Tyr Glu Asn Ala Phe Ser Phe Glu Ala Phe Ala Phe Glu
    130                 135                 140
Lys Ala Ala Glu Thr Tyr Thr Thr Leu His Gly His Pro Val Ile Arg
145                 150                 155                 160
Phe Ser Gly Lys Leu Phe Arg Phe Pro Gln Ile Ser Phe Pro Pro Leu
                165                 170                 175
Asp Glu Ala Ile
            180
<210>1167
<211>92
<212>PRT
<213>Chlamydia trachomatis
<400>1167
Val Cys Gly Gln Lys Leu Gln Leu Leu Leu Val Lys Ser Glu Trp Arg
  1               5                  10                  15
Tyr Leu Arg Cys Thr Lys Ile Arg Leu Arg Asn Val Glu Lys Pro Leu
             20                  25                  30
Ser Pro Phe Arg Lys Glu Gly Trp Leu Val Gly Cys Leu Pro Arg Glu
         35                  40                  45
Gly Ala Cys Phe Val Asn Phe Cys Pro Val His Ser Tyr Thr Ile Gly
```

```
     50                  55                  60
Cys Pro Val Gly Asn Ser Lys Glu Ser Thr Cys Ser Ser Asp Asn Phe
 65                  70                  75                  80
Ser Arg Ser Ile Ile Lys Glu Arg Lys Glu Phe Pro
                 85                  90
<210>1168
<211>109
<212>PRT
<213>Chlamydia trachomatis
<400>1168
Met Leu Leu Leu Cys Ser Met Arg Lys Arg Arg Lys Lys Leu Ile Val
  1               5                  10                  15
Leu Ser Val Glu Val Phe Leu Ser Ile Val Ile Ala Gln Glu Tyr Val
            20                  25                  30
Ile Val Leu Val Lys Arg Trp Gln Lys Thr Phe Tyr Asn Ile Met Trp
        35                  40                  45
Gly Ser Leu Ile Glu Arg Tyr Val Ile Phe Arg Arg Val Phe Gly Ile
     50                  55                  60
Gln Met Ser Lys Gly Ile Arg Gly Leu Phe Leu Phe Val Arg Ile Thr
 65                  70                  75                  80
Leu Lys Asn Leu Gln Ile Phe Trp Leu Lys Ser Cys Ile Trp Thr Val
                 85                  90                  95
Ile Ser Leu Lys Ile Arg Ser Met Pro Lys Leu Leu Tyr
            100                 105
<210>1169
<211>105
<212>PRT
<213>Chlamydia trachomatis
<400>1169
Leu Phe Asn Arg Ser Arg Thr Phe Phe Ser Cys Phe Leu Ile Leu Arg
  1               5                  10                  15
Thr Val Leu Tyr Arg Leu Asp Asn Arg Phe Ser Gly Cys Met Trp Ile
            20                  25                  30
Phe Leu Pro Arg Lys Ser Leu Val Ile Ser Trp Ile Gly Asn Gly Phe
        35                  40                  45
Leu Leu Leu Phe Tyr Leu Leu Ser Tyr Thr Glu Ile Asp Gly Ile His
     50                  55                  60
Ser Thr Thr Ser Ile Thr Leu Phe Leu Phe Pro Glu Phe Arg Ser Phe
 65                  70                  75                  80
Phe Phe Leu Phe Gly Tyr Leu Leu Phe Lys Ser Leu Phe Phe Leu Cys
                 85                  90                  95
Ser Ser Cys Leu Leu Ser Arg Ala Leu
            100                 105
<210>1170
<211>179
<212>PRT
<213>Chlamydia trachomatis
<400>1170
Leu Ile Thr Val Lys Thr Arg Arg Ala Lys Ala Leu Tyr Ser Glu Leu
  1               5                  10                  15
Phe Ala Thr Lys Gln Val Lys Lys Leu Tyr Val Ala Ile Cys Ile Asn
            20                  25                  30
Ala Pro Ser Gln Glu Leu Ile His Thr Arg Ile Thr Arg His Pro Leu
        35                  40                  45
Lys Arg Lys Glu Met Thr Val Leu Ser Thr His Ala Glu Gly Gly Lys
     50                  55                  60
Glu Ala Ile Thr His Cys His Val Leu Ala Thr Asn Gly Arg Leu Ser
 65                  70                  75                  80
Val Val Ala Leu Tyr Pro Glu Thr Gly Arg Thr His Gln Leu Arg Val
                 85                  90                  95
His Met Lys His Leu Gly Thr Pro Ile Leu Gly Asp Pro Val Tyr Gly
```

Sequence Listing

```
            100                 105                 110
Ile Pro Ser Ile Asn Phe Arg Tyr Gly Leu Asp Lys Gln Gln Leu His
        115                 120                 125
Ala Tyr Ser Leu Val Phe Ala His Pro Glu Ser Ala Glu Arg Val Lys
    130                 135                 140
Leu Val Thr Lys Leu Pro Asp Asp Met Thr Ser Leu Ile Glu Lys Glu
145                 150                 155                 160
Phe Arg Glu Gly Val Ser Ile Leu Asp Gly Ser Cys Asp Trp Phe Lys
                165                 170                 175
Ile Thr Arg
```

<210>1171
<211>80
<212>PRT
<213>Chlamydia trachomatis
<400>1171

```
Met Lys Arg Ser Tyr Ile Ser Cys Pro Phe Cys Ser Pro Ile Phe Ala
  1               5                  10                  15
Ile Arg Ala Cys Arg Asn Trp Ser Lys Glu Arg Thr Gly Pro Ser Lys
            20                  25                  30
Val Ile Phe Asp Gly Asp Ile Asn Ser Ser Phe Thr Trp Pro Glu Thr
        35                  40                  45
Glu Val Thr Pro Trp Phe Arg Thr Asp Arg Leu Ala Met Asn Cys Val
    50                  55                  60
Ser Ile Thr Arg Asp Ser Pro Asn Thr Lys Ile Phe Leu Tyr Phe Thr
65                  70                  75                  80
```

<210>1172
<211>140
<212>PRT
<213>Chlamydia trachomatis
<400>1172

```
Leu Leu Ser Arg Arg Ala Gly Val Pro Val Ile Ile Ser Leu Leu Phe
  1               5                  10                  15
Ser Glu Leu Ser Pro Asp Gln Glu Val Tyr Arg Asp Ala Val Ala Ala
            20                  25                  30
Ala Phe Gln Gly Val Arg Ser Cys His Thr Cys Phe Ser Tyr Ser Trp
        35                  40                  45
Gly Asp Phe Ser Arg Lys Ala Cys Ser Tyr Trp Ile Lys Lys Arg Leu
    50                  55                  60
Trp Ser Leu Ser Lys Leu Ala Phe Ala Ser Ala Leu Ala Ile Phe Ile
65                  70                  75                  80
Gly Gly Gly Val Glu Ser Leu Leu Leu Val His Lys Ala Gln Gln Ile
                85                  90                  95
Phe Arg Glu Ile Ala Pro Glu Lys Glu Ile Thr Arg Val Phe Arg Ser
            100                 105                 110
Ala Gln Gln Val Val Lys Glu Val Cys Asp Ser Asp His Ser Trp Glu
        115                 120                 125
Tyr Glu Tyr Leu Leu Arg Tyr Pro Arg Ile Lys Lys
    130                 135                 140
```

<210>1173
<211>98
<212>PRT
<213>Chlamydia trachomatis
<400>1173

```
Met Leu Ser Tyr Leu Leu Arg Thr Ala Val Asn Ile Tyr Ser Phe Leu
  1               5                  10                  15
Ile Leu Val Tyr Val Leu Cys Ser Trp Leu Pro Glu Cys His Asn Thr
            20                  25                  30
Gln Trp Tyr Arg Ile Ile Arg Arg Trp Val Ser Pro Tyr Leu Arg Ile
        35                  40                  45
Phe His Lys Phe Val Pro Arg Ile Gly Phe Ile Asp Ile Ser Pro Met
```

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```
     50                  55                  60
Ile Ala Leu Leu Cys Leu Gly Val Leu Pro Phe Met Ile Leu Lys Ile
 65                  70                  75                  80
Val Arg Phe Ile Val Leu Asn Ile Phe Gln Ser Pro Trp Leu Leu Gln
                 85                  90                  95
Tyr Leu
```

<210>1174
<211>107
<212>PRT
<213>Chlamydia trachomatis
<400>1174

```
Val Lys Thr Ala Ser Leu Val Lys Ile Phe Ala Arg Leu Ile Ser Ser
  1               5                  10                  15
Asp Lys Thr Arg Ile Ser Ser Cys Ser Leu Ala Arg Leu Ser Glu Ala
             20                  25                  30
Asn Leu Tyr Ser Glu Phe Ser Leu Lys Ser Pro Lys Ala Leu Ala Ser
         35                  40                  45
Ser Ile Ser Leu Ala Phe Ser Thr Ile Ser Phe Pro Thr Arg Asp Cys
     50                  55                  60
Ser Leu Phe Phe Ile Arg Val Lys Leu Ser Glu Val Val Gln Arg Ile
 65                  70                  75                  80
Phe Ser Ser Ser Ser Arg Val Pro Leu Leu Arg Ala Gly Cys Thr Thr
                 85                  90                  95
Ser Ala Lys Leu Leu Lys Thr Pro Arg Ser Pro
            100                 105
```

<210>1175
<211>112
<212>PRT
<213>Chlamydia trachomatis
<400>1175

```
Val Gly Gly Asn Glu Ser Ile Ala Lys Tyr Asn Asn Val Phe Phe Val
  1               5                  10                  15
Trp Gln Ser Tyr Ile Ser Leu Glu Leu Phe Ala Tyr Ser Lys Asn Pro
             20                  25                  30
Leu Ser Tyr Tyr Trp Ser Phe Pro Ser His Thr Ala Cys Leu Gln Cys
         35                  40                  45
Ile Pro Lys Leu Tyr Pro Tyr Lys Ser Arg Ile Leu Gly Leu Ile Ile
     50                  55                  60
Val Phe Leu Asn Phe Gly Ile Ser Thr Val Leu Glu Ser Thr Met Met
 65                  70                  75                  80
Leu Ala Thr Thr Glu Thr Ser Phe Lys Ile Gly Leu Phe Pro Pro Ser
                 85                  90                  95
Phe Ile Leu Ser Ile Leu Phe Phe Phe Leu Phe Tyr Cys Leu Phe Thr
            100                 105                 110
```

<210>1176
<211>103
<212>PRT
<213>Chlamydia trachomatis
<400>1176

```
Lys Val Met Ser Ser Leu Asn Leu His Thr Leu Gly Ile Asn Cys Gly
  1               5                  10                  15
Gln Arg Val Arg Arg Asp Lys Lys Ala Val Arg Tyr Leu Gln Leu Phe
             20                  25                  30
Gln Ser Leu Arg Arg Gly Asp Leu Phe Gln Glu Trp Gln Pro Asn His
         35                  40                  45
Lys Asn Ile Arg Phe Val Val Leu Leu Val Asn Asn Ala Lys Arg Lys
     50                  55                  60
Phe Leu Leu Gly Glu Asn Ser Asn Val Asp Arg Glu Gly Tyr Leu Leu
 65                  70                  75                  80
Arg Lys Arg Glu Glu Gln Ala Leu Phe Val Ile Asn Phe Arg Lys Tyr
```

Sequence Listing

85 90 95
Ile Leu Phe Gln Leu Phe Leu
100

<210>1177
<211>84
<212>PRT
<213>Chlamydia trachomatis
<400>1177
Lys Leu Ile Phe Phe Leu Lys Ser Val Thr Leu Tyr Asn Ser Phe Leu
1 5 10 15
Phe Leu Cys Cys Tyr Ala Pro Thr Ser Phe Leu Phe Leu Ser Met Asp
20 25 30
Lys Arg Arg Arg Leu Asp Arg Arg Asp Arg Arg Gly Met Leu Ser Ser
35 40 45
Tyr Ser Arg Gly Glu Ala Ala Cys Val Phe Arg Gly Leu Gly Ala Thr
50 55 60
Arg Leu Phe Tyr Arg Gly Arg Thr Pro Gly Phe Thr Glu Ser Val Cys
65 70 75 80
Val Pro Trp Leu

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<213>Chlamydia trachomatis
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1 5 10 15
Val Thr Val Val Ser Leu Asp Ala Ala Gly Thr Arg Lys Arg Ile Ser
20 25 30
Tyr Ala Lys Leu Gln Glu Lys Glu Glu Val Ala Phe Ser Ala Gln Gln
35 40 45
Ser Ala Ile Ser Glu Val Ile Xaa Arg Asp Lys Thr Asn Asp Cys Leu
50 55 60
Pro Arg Arg Lys Lys Gln Ser Leu Val Arg Lys Ile Arg Ser Val Ile
65 70 75 80
Val Ser Leu Phe Gly Arg Ser Ala Ile Asp Cys
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<213>Chlamydia trachomatis
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Lys Glu Ser Ser Ser Gln Glu Pro Ser Ala Ser Lys Phe Gly Ser Leu
20 25 30
Lys Gln Lys Val Arg Asp Leu His Thr Asn Pro Lys Val Gly Gly Met
35 40 45
Lys Arg Phe Leu Ser Arg His Ala Cys Glu Ala Ile Gly Gly Ala Leu
50 55 60
Ile Val Phe Gly Ile Ile Ala Asn Cys Val Ser Trp Val Gly Gly Leu
65 70 75 80
Phe Val Ala Ser Gly Ile Val Leu Gly Phe Tyr Pro Glu Ile Leu Ala
85 90 95
Val Leu Gln Asn Leu Gln Ser Tyr Tyr Ala Lys Asn Gly Pro Ile Lys
100 105 110
Asn Ala Leu Val Cys Gly Val Ala Leu Phe Trp Leu Ile Lys Ala Pro
115 120 125
Ser Phe Val Leu Ser Phe Ile Val Leu Cys Ile Ile Val Ile Leu Leu
130 135 140
Ala Gln Gly Gln His Lys Asp Thr Thr Ser Arg His Glu

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145 150 155

<210>1180
<211>79
<212>PRT
<213>Chlamydia trachomatis
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Leu Thr Phe Leu Phe Phe Leu Ser Cys Tyr His Phe Ser Ser Leu Arg
            20                  25                  30
Phe Tyr Pro Pro Arg Cys Thr Ile Arg Glu Met Tyr Leu Ser Glu Gly
        35                  40                  45
Pro Leu Phe Ser Phe Pro Arg Lys Ala Trp Lys Glu Asn Pro Leu Pro
    50                  55                  60
Ser Asp Asn His Leu Ile Trp Ile Val Ala Ile Leu Asn Thr His
65                  70                  75
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<213>Chlamydia trachomatis
<400>1181

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 1               5                  10                  15
His Leu Cys Leu Leu Phe Ser Leu Thr Pro Thr Gly Leu Phe Ser Ala
            20                  25                  30
Ala Pro Ile Ser Ala His Pro Ser Val Thr Lys Lys Leu Ser Leu Arg
        35                  40                  45
Gln Leu Phe Lys Arg Phe Leu Pro Glu Thr Ser His Asn Lys Lys Glu
    50                  55                  60
Arg Tyr Tyr His Phe Leu Lys His Val Ser His Ala Leu Lys Arg Pro
65                  70                  75                  80
Glu Ile Trp Asn Asp Leu Gln Asn Leu Leu Leu Ile Leu Met Gln Phe
                85                  90                  95
Glu Gln Phe Ala Asn Gln Glu Val Gly Ser Arg Arg Tyr Glu Glu Ile
            100                 105                 110
Leu Ser Gln Ile Asn Arg Lys Lys Asn Ser Phe Pro Ile Ile Arg Ala
        115                 120                 125
Thr Gly Phe
    130
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<210>1182
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<213>Chlamydia trachomatis
<400>1182

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His Ala Gln Ser Arg Ser Leu Leu Pro Lys Gln Trp Asn Ile Lys Phe
            20                  25                  30
Pro Arg Ser Leu Leu Pro Ile Thr Gly Ile Cys Leu Ala Arg Ser Asn
        35                  40                  45
Phe Ile Arg Pro Val Asn Lys Thr Arg Leu Asn Leu Ser Ser Gly Val
    50                  55                  60
Ser Tyr Thr Ser His Pro Leu Leu Val Ser Ile Lys Lys Lys Asn Glu
65                  70                  75                  80
Lys Ala Glu Leu Pro Thr Ile Ser Ser Phe Phe Val Lys Met Lys Lys
                85                  90                  95
Gly Ile Ala Thr Phe Val Cys Ser Pro Leu Leu Leu Thr Gln Lys Val
            100                 105                 110
Phe Thr Met Cys Leu Ala
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Val Thr Pro Lys Glu Phe Ser Gly Leu Leu Glu Asn Leu Leu Leu Phe
20 25 30
Ser Leu Leu Phe Leu Leu Phe Asp Thr Pro Tyr Ser Pro Leu Ile His
35 40 45
Pro Gln Tyr Ala Ala Ser Ser Pro Leu Leu Pro Leu Phe Thr Gln Gln
50 55 60
Met Tyr Cys Leu Leu Lys Ala Ile Lys Leu Asn Glu Arg Ser Val Asp
65 70 75 80
Asp Ile Thr Thr Ile Val Gln Tyr Asp Ala Arg Ala Gly Leu Ala
85 90 95
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<213>Chlamydia trachomatis
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Tyr Phe Xaa Asn Ile His Thr Tyr Pro Tyr Phe Phe Gln Leu Leu Asn
1 5 10 15
Gly Lys Leu Ile Leu Leu Leu Ile Thr Ser Leu Leu Leu Lys Gly Ser
20 25 30
Leu Ser Ala His Ile Pro Val Leu Tyr Leu Leu Ser Leu Pro Cys Lys
35 40 45
Ser Ile Phe Thr Lys Ser Lys Thr Gly Leu Thr Ser Pro Cys Ser Arg
50 55 60
Gly Arg Gly Ile Leu Asn Arg Leu His Ala Ile Met Ile Phe Arg Xaa
65 70 75 80
Ala Gln Ala His Tyr Val Phe Gln
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<213>Chlamydia trachomatis
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Leu Leu Lys Lys Lys Lys Asp Asn Ile Arg Val Ser Leu Ser Gly Phe
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Cys Met Leu Gly Arg Ala Gln Arg Thr Leu Lys Arg Lys Val Cys Tyr
20 25 30
Ser Gly Val Gly Val His Phe Gly Lys Ala Ala Met Leu Thr Xaa Glu
35 40 45
Pro Ala Glu Glu Asn Thr Gly Val Phe Ser Leu Val Met Gln Leu Leu
50 55 60
Asn Ser Ile Phe Pro Leu Asp Trp Arg Met Phe Val Glu Arg Asp Val
65 70 75 80
Ala Pro His Cys Leu
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Ile Cys Lys Phe His Asp Phe Ile Leu Asn Arg Gly Ala Ile Ser Trp
20 25 30
Pro Asn Ser Phe Asp Ser Pro Ser Ile Gln Ser Gly Thr Met Gln Ile
35 40 45

Phe Gly Tyr Lys Ile Phe Cys Leu Ile Ser Gly Met Ser Asn Val Thr
50 55 60
Arg Asn Leu Trp Gln Cys Arg Asn Lys His Leu Val Ser Met Asn Glu
65 70 75 80
Thr Asn Val Met Ile Thr Trp Leu Leu Phe His Tyr Arg Lys Ile Asn
85 90 95
Arg

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Glu Leu Phe Ser Asp Ser Pro Met Leu Phe His Ile Phe Val Gly Ile
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Pro Ile Gln Glu Gln Ile Leu His Leu Glu Pro Pro Leu Arg Ile Ile
20 25 30
Ser Phe Tyr Gly Lys Arg Phe Leu Gly Ile Tyr Ser Glu Thr Lys Glu
35 40 45
Ser Phe His Ser Asp Glu Val Ala Glu Leu Leu Lys Thr Ala Leu Leu
50 55 60
Gln Leu Lys Arg Val Ala Phe Arg Asn Ile Gln Thr Tyr Gln Ala Thr
65 70 75 80
Pro Ile Ile Ile Pro Glu Ile Leu Ile Gly
85 90

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Met Asp Phe Met Ser Val Val Pro Gln Ser Pro Cys Ser Ser Pro Thr
20 25 30
Asn Phe Tyr Arg Arg Leu Ser Val Ser Trp Arg Ala Ser Leu Ser Pro
35 40 45
Arg Ala Arg Tyr Glu Val Gly Ser Leu Leu Ala Ile Val Gly Leu Ile
50 55 60
Leu Thr Leu Ile Gly Ala Ala Ser Ile His Ala Val Leu Leu Gln Ser
65 70 75 80
Val Ala Thr Pro Ala Ile Leu Ser Leu Cys Ser Ala Phe Ser Ile Arg
85 90 95
Pro Leu Ala Thr Ala Ile Phe Ser Val Ile Val Gly Leu Ala Leu Leu
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Ile Gly Gly Ile Phe Leu Leu Pro Val Gln Gln Glu Thr Pro His Ser
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Ser Leu Arg Tyr Leu Ala Thr Thr Pro
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1 5 10 15
Gly Leu Val His Leu Tyr Arg Trp Ala Ile Ser Pro Phe Leu Gly Ala
20 25 30
Pro Cys Arg Phe Phe Pro Thr Cys Ser Glu Tyr Ala Leu Val Ala Leu
35 40 45
Lys Lys Pro Pro Leu Arg Lys Ser Leu Phe Leu Ile Ala Lys Arg Leu
50 55 60

Leu Lys Cys Gly Pro Trp Cys Ile Gly Gly Ile Asp Leu Val Pro Arg
65 70 75 80
Thr Ser Val Glu Glu Tyr Leu Ser Ser Pro Thr Pro Leu Ala Glu Ser
85 90 95
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100 105

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20 25 30
Leu Ser Phe Leu Ile Gln Glu Leu Ser Tyr Pro Gln Gln Gln Ile Ile
35 40 45
Val Glu Lys Gly Ile Lys Ser Cys Ile Pro Ala Ser Leu Pro Pro Leu
50 55 60
Pro Lys Lys Met Arg Gly Arg Ala Asp Val Leu Ile Leu Ser Pro Ser
65 70 75 80
Ser Tyr Val Ser Ser Glu Gly Ala Ser Ile Ser Phe Pro His Pro Gln
85 90 95
Pro Leu Leu Leu Ile Glu Cys Lys Ala Lys Thr Val Thr Ser Leu Ser
100 105 110
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20 25 30
Asn Thr Gly Thr Leu Pro Pro Asn Ile Gln Xaa Lys Leu Phe Ile Pro
35 40 45
Phe Phe Thr Thr Lys Pro Gln Gly Asn Gly Leu Gly Leu Ala Glu Ala
50 55 60
His Lys Ile Met Arg Leu His Gly Gly Asp Leu Val Val Ser Thr Gln
65 70 75 80
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85 90

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20 25 30

Substitute Sheet (Rule 26)

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             20                  25                  30
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          35                  40                  45
Leu Ala Met Gln Gly Arg Glu Arg Phe Gln Glu Ala Leu Ile Gln Leu
      50                  55                  60
Phe Pro Glu Thr Arg Ala Phe Xaa Pro Ser Tyr Phe Leu Asp Arg Asp
 65                  70                  75                  80
Arg Cys Tyr His Asp Leu Leu Ser Cys Glu Gln Ile Gln Leu Met Pro
                 85                  90                  95
Gly Val Glu Thr Phe Leu Ser Leu Leu Glu Gly Lys Cys Leu Gly Val
            100                 105                 110
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             20                  25                  30
Lys Arg Glu Tyr Ile Leu Ala Gln Lys Cys Ser Pro Leu Phe Lys His
          35                  40                  45
Ala Arg Thr Leu Asp Phe Ser Leu Ala Gln Ala Val Phe Glu Met Thr
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Gln Asn
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             20                  25                  30
Ser Gln Ile Ser Thr Pro Val Leu Pro Gln Asn Gln Arg Val Thr Phe
          35                  40                  45
Phe Arg Asn Thr Ala Met Leu Thr Cys Ser Leu Leu Phe Thr Leu Cys
      50                  55                  60
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Ser Ala Val Leu Phe Ile Ile Gly Leu Phe Pro Gln Thr Thr Ile Pro
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Phe Ala Gly Ala Phe Phe Val Ile Gly Met Phe Leu Ala Phe Ser Ala
                 85                  90                  95
Leu Cys Ile Phe Leu Met Ala Leu Ile Tyr Asn Val Lys Asn Trp Leu
            100                 105                 110
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        115                 120                 125
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    130
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Pro Gln Ile Arg His Ala Arg Lys Phe Leu Val Ser Ala Ser His Ile
         35                  40                  45
Leu Leu Thr Ser Pro Ser Ser Thr Ala Cys Phe Phe Ser Ser Ile Arg
     50                  55                  60
Lys Arg Ile Pro Leu Ser Leu Phe Arg Asn Lys Ser Phe Val Thr Ile
 65                  70                  75                  80
Gly Glu Ala Ser Ser Ser Arg Val Lys Ala Phe Leu Pro Lys Ala Asn
                 85                  90                  95
Ile Val Gln Ser Ala Phe Pro Gln Ala Glu Ala Phe Leu Pro Ile Leu
            100                 105                 110
Ser Thr Leu Pro Ser Ser Ser Ser Leu Leu Tyr Pro His Ser Val Leu
        115                 120                 125
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    130                 135                 140
Phe Ser Tyr Pro His Tyr Thr Val Lys Pro Ile Thr Leu Ser Val Ser
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Thr Phe Leu Pro His Lys Thr Ile Ile Leu Thr Ser Pro Ser Ile Val
                165                 170                 175
Arg Ala Tyr Ala Gln Leu Phe Pro Cys Leu Pro Asp Lys Glu His Trp
            180                 185                 190
Cys Leu Gly Glu Ile Ser Ala Ala Glu Phe Lys Gln Ile Phe His Thr
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Cys Gly Cys Ser Cys Ser Gly Lys Val Ser Cys Thr Arg Cys Val Cys
             20                  25                  30
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         35                  40                  45
Arg Gly Val Ile Ile Ile Leu Leu Leu Gly Ile Ile Thr Ile Leu Val
     50                  55                  60
Thr Phe Thr Ile Cys Arg Trp Gly Ser Thr Ala Ser Thr Cys Ser Ser
 65                  70                  75                  80
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Substitute Sheet (Rule 26)

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